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AEROSOL AGE

THE MAGAZINE OF PRESSURE PACKAGING

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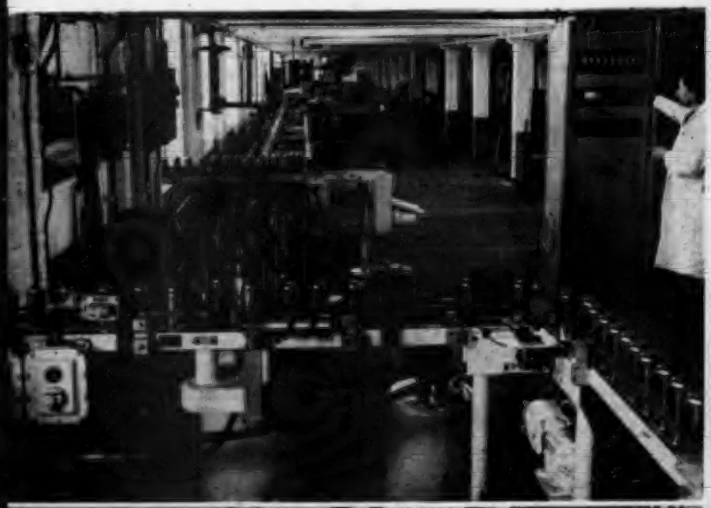

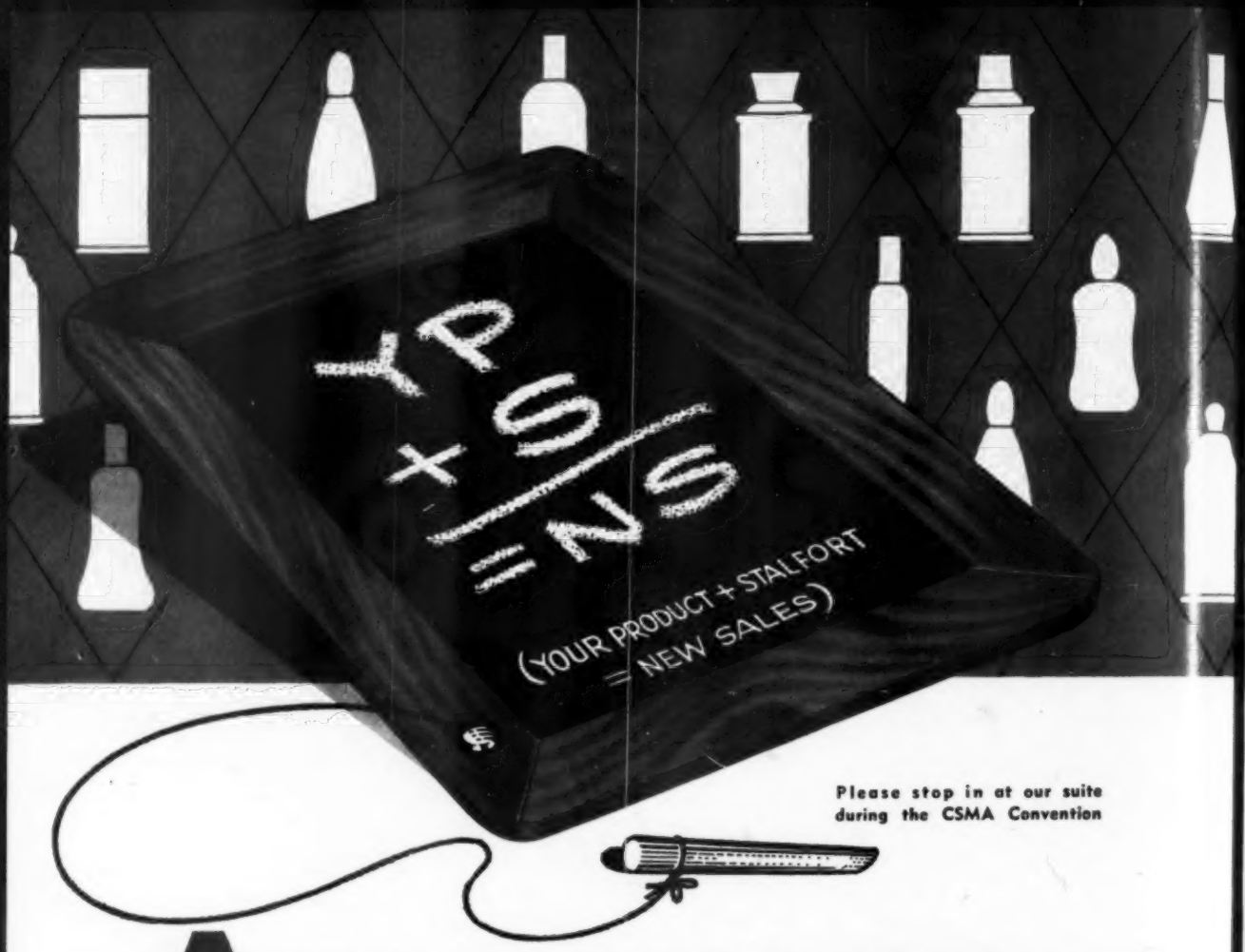

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AERO

THIS MONTH'S COVER

A new aerosol custom filler has been organized in a major industrial city where heretofore there hasn't been any aerosol filling. The new company is the Scranton Aerosol Packaging Division of the Scranton Corp. (Story on page 39.) In the lower photo of the two on the cover Henry Belin, division manager and Albert E. Osman, production manager, check final installation of the pressure fill line. Upper photo shows crimping unit on line. Man in photo is checking safety equipment.

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DECEMBER, 1958 VOL. 3, No. 12

AEROSOL AGE

The magazine of pressure packaging

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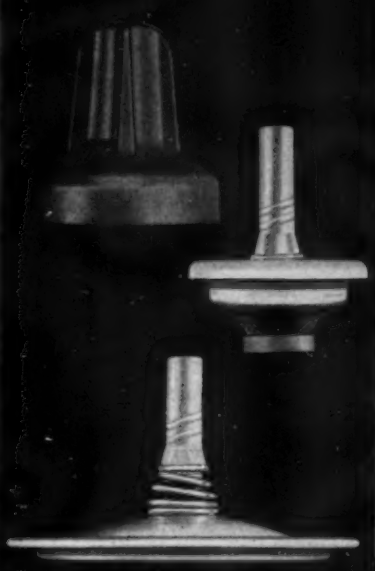

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from the

EDITOR'S MAILBAG

To The Editor:

Congratulations on your excellent editorial "Realism in Public Relations" in your November issue. I am delighted to see an important publication in a rapidly expanding industry recognize the role of public relations for the individual aerosol manufacturer. Your statement, "In fact, good public relations can act as a lever to open closed doors, a blank check for future credit, and a clean-bill toward labor peace in the company's plant," is one of the best observations on public relations I have ever read.

I hope your editorial will inspire other manufacturers in the industry to take another look at the public relations opportunities they may be missing. As you so well express, "The result can be well worth the comparatively small expenditure of time and effort."

Monroe B. Scharff
Public Relations Counselor
10 Rockefeller Plaza
New York 20, N. Y.

To the Editor:

I am interested in obtaining a quantity of high pressure aerosol insecticides (with automatic tops) similar to the ones formerly made by Bridgepost Brass. Can you put me in touch with anyone either has an oversupply of them—or else with a filler who can fill them.

Sidney Goldfarb
67 Forsythia Lane
Jericho, L.I., N.Y.

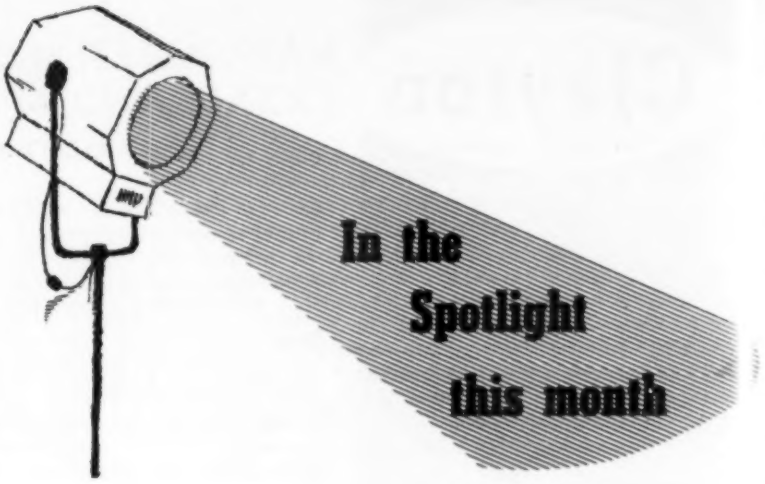
Our readers who may have this type of high pressure unit on hand are invited to contact Mr. Goldfarb directly.

INDUSTRY CALENDAR

Dec. 8—Toilet Goods Assn., Scientific Section, Waldorf-Astoria Hotel, New York.

Dec. 9-11—Chemical Specialties Manufacturers Association, 45th annual meeting, Commodore Hotel, New York, N. Y.

Jan. 30-Feb. 1—Eastern School of Retail Management and Trade Show (formerly the Garden Supply Trade Show). Hotel Statler, New York City.



- **The Formulation of Aerosol Alkyd Enamels** . . . Frank A. Bower, of DuPont, writes a detailed article on various considerations for the packager who contemplates filling alkyd enamels. Performance charts, formulae, and new information make this article, beginning on page 36, one of the most complete in recent technical literature.

- **Scranton Firm Unveils New Filling Plant** . . . A company with widely diversified interests enters the aerosol field after a detailed study of its possibilities. Photos of the plant, new filling lines, and story begin on page 39.

- **Canadian Chemical Specialties Assn. Meets in Montreal** . . . A report on one of the most successful first meetings in trade association history, together with pictures of many of the participants, appears on page 40.

- **Technical Aspects of Aerosol Packaging** . . . A leading Canadian expert in the field of propellants tells how these materials generally affect aerosol formulation. His paper, delivered at the CMCSA meeting, is carried fully on pages 42-44.

- **The Evolution of Aerosol Valves** . . . How have aerosol valves evolved from the somewhat crude implements of a decade ago? What does the future hold for aerosol valve development? These and other questions are answered by Joseph Pizzurro, technical director of Precision Valve Corp., in an article on page 45.

- **Packaging Pressurized Food Products** . . . The entire field of food packaging under pressure, from the setting up of filling lines to shelf testing, comes in for a detailed discussion on page 57.

EDITORIALS

Progress in Europe . . .

As will have been observed from reading the spate of articles written by Europeans in *Aerosol Age* during the last year or so, the aerosol industry in Europe is manifesting a new technical maturity of late. Important aerosol technical advances are being made (and reported) in ever increasing numbers, and European reliance on the U. S. industry for ideas, equipment, and general leadership appears to be coming to an end.

This is undoubtedly a good thing for the entire aerosol industry, since the infusion of radical new ideas and improvements in all facets of pressurized packaging can result only in the opening up of new markets, lowered prices for the consumer, and substantially rising sales volume each year. Also, this research seems to be going on along completely different lines from the research carried on by the U. S. industry, so that advances made usually signify a definite contribution toward the progress of the industry in general, rather than an attempt to improve any company's competitive position against that of a U. S. company with similar interests.

The importance of this growing maturity by the European industry should not be minimized. After all, it was not long ago that the European chemical industry, probably typified by that of Germany in the pre-war period, dominated the entire world chemical industry in synthetics, dyes, fuels, chemicals in metallurgy, and a host of others. In imagination, inventive genius, and chemical know-how, it would be difficult to surpass some of the top-flight men in the European industry today, and we can look for a continuing stream of new and exciting aerosol technical developments from Europe.

This is not to say that all aerosol developments reported from Europe must have merit, or that they can be practically applied to U. S. filling techniques. Naturally enough, price differences and material shortages (because of tariffs walls) for which there are no counterparts here, often occur in Europe, so that stress may be placed in technical areas in which no practical problems exist in the United States. Nevertheless, the aerosol developments in Europe do bear close watching by the entire U. S. Industry.

The Canadian Meeting . . .

A meeting which we think was one of the most successful "first" meetings in recent memory has just been concluded in Canada. The Canadian Manufacturers of Chemical Specialties held its first meeting in Montreal Nov. 13-14. It was superbly arranged from every standpoint. The formal program had excellent speakers (from both the U. S. and Canada) and the papers, speeches, and social events went off without a hitch. The board of directors and the program committee of the new association are to be heartily congratulated for this memorable first convention.

The Aerosol Division Anniversary . . .

The 45th meeting of the Chemical Specialties Manufacturers Association will mark the tenth anniversary of the association's Aerosol Division, which has grown to become the most lusty and the most energetic division in the CSMA. The Division's record in working out government regulations, in evolving recommended test procedures, in disseminating technical and general information, and in other important areas, needs no amplification here. The record has been a truly marvelous one, and without the work of the association it is fair to say that the aerosol industry would have had a rocky road—and would have achieved only a fraction of its striking success.

The Formulation of Aerosol Alkyd

MUCH of the available information concerning the formulation of aerosol surface coatings appears as semi-empirical observations on the properties of various formulations. Fundamental information of a general nature has not been easily obtainable. In order to provide the aerosol industry with some data of this type, an experimental program has been carried out at the "Freon" Products Laboratory to evaluate the effects of the major variables of alkyd enamel formulations. This paper is a report of this experimental work. Other publications of general interest have appeared in recent literature (1, 2, 3).

Properties of Aerosol Paints

Any aerosol paint formulation must have certain characteristics in order to be an acceptable package. To allow painting at a reasonable rate and to make it easy to avoid depositing excessive amounts of material, the spray pattern should be such that a fairly large area is covered by the cone. Usually, a circular area four to five inches in diameter will give good results. As with all paints, the aerosol product is expected to produce a coating with no tendency to run or sag and which does not exhibit orange peel or bubbling. Hiding power should be such that complete covering of the sprayed surface can be obtained in one coat of normal thickness. Colored formulations ordinarily present no difficulty in this respect, but the hiding power of most whites is limited by the quantity of pigment which can be included in a reliable formulation.

An important property which is frequently overlooked is the discharge rate of the aerosol container. This rate should be low enough so that an amateur can paint successfully without applying excessive amounts of material. Excessively thick coatings not only waste paint, but also lead to sagging and bubbling problems.

The variables of aerosol paint formulations which influence these important properties are: pigment to resin ratio, viscosity, solvent evaporation rate, solvent power, and valves.

Materials and Conditions

For the purposes of this experimental program, pigments were obtained as standard dispersions in an alkyd resin. These concentrated pigment pastes provided a convenient source of uniform quality pigments. To use these dispersions, it was necessary only to add an alkyd resin to obtain the desired pigment to resin ratio and an appropriate solvent blend. Beckosol 7 was selected as an example of the more viscous, less soluble alkyd resins.

To examine the effects of viscosity changes and solvent variables, the propellant concentration was arbitrarily established at 40%, the lowest level which gave reliable spray characteristics. A valve was selected which permitted exploring the effects of orifice combinations without the necessity of preparing a large number of samples.

The pigment-to-resin ratio of all surface coating compositions is essentially fixed at the minimum amount of pigment which will produce complete hiding with one coat 1 to 2 mils thick. The experience of conventional paints can be successfully adapted to aerosol formulations. With whites and pastel colors, the pigment to resin ratio should be approximately 1:1. With colored paints, the ratios are usually approximately 1:3, while in blacks, ratios as low as 1:10 can be used and still obtain adequate hiding.

Viscosity

The viscosity of a surface coating composition is affected by the viscosity of the film-forming resin, its concentration, the viscosity of the solvent system, and to a lesser degree, by pigmentation. The important property is the viscosity of the complete aerosol formulation. The effects of this variable and a suitable method of determination have been described (4). Because of the specialized nature of the apparatus required, it was decided in this work to study concentrate viscosities by using the No. 4 Ford Cup. Since the propellant concentration was arbitrarily set at 40 wt. %, the viscosity of the complete formulation was thus indirectly defined.

Concentrates having viscosities of 35, 30, 25, 20, and 15 seconds as measured on the No. 4 Ford Cup were loaded with 40% "Freon-12". Spray characteristics were examined using a wide variety of valve orifice sizes. Visual observation of the spray characteristics indicated that the particle size distribution of the spray became progressively smaller as the viscosity decreased. The most satisfactory paint films were produced at a viscosity of approximately 20

Enamels

By Frank A. Bower
"Freon"* Products Laboratory
E. I. duPont de Nemours and Company, Inc.
Wilmington, Del.

Typical of early enamel formulations is this one developed by Plasti-Kote Co., Cleveland, as an all-purpose spray. The product is dust-free in 20 minutes and dries hard in three hours.

seconds (resin concentration 25%) using an actuator with .020" internal and external orifices and a mechanical break-up feature. It is probable that slightly different viscosities would prove optimum for other aerosol valves, but such an optimum viscosity for every valve was not determined.

Solvent Selection

Selection of solvent for an aerosol paint formulation can be simplified by a consideration of the solubility parameter of the resins involved (5, 6, 7, 8). The solubility parameter of a polymer or a solvent is a property which compares the solvent power of amorphous substances. This concept is most easily understood by an examination of its derivation. The ordinary free energy equation

$$\Delta F = \Delta H - T\Delta S \qquad (1)$$

where ΔF = free energy change
ΔH = heat of mixing
ΔS = entropy change
T = absolute temperature

can be applied to the mixing of two amorphous substances. If ΔF is negative, the process will occur spontaneously, i. e., the two substances will mix. If ΔF is positive, mixing will not occur. It is evident that the sign of ΔF depends upon the relative magnitude of the heat term and the entropy term.

When a polymer dissolves, the molecules experience a large increase in freedom of movement. This results in a large entropy increase. Since the solution of a polymer in a solvent invariably involves a large entropy change, it is apparent that the heat term is the deciding factor in determining the sign of the free energy change.

It can be shown that the heat of mixing, ΔH_M, is proportional to the quantity

$$\left[\left(\frac{\Delta E_1}{V_1}\right)^{1/2} - \left(\frac{\Delta E_2}{V_2}\right)^{1/2}\right]^2$$

where ΔE is the energy of vaporization at zero pressure and V is the molal volume of the substances being mixed. The value $\left(\frac{\Delta E}{V}\right)^{1/2}$ has been termed the solubility parameter and is designated by the Greek letter delta (δ). Expressing this mathematically gives

$$\Delta H_M = K(\delta_1 - \delta_2)^2 \qquad (2)$$

In order that substances 1 and 2 be miscible, ΔH_M must be smaller than $T\Delta S$ (Eq. 1). If $\Delta H_M = 0$, solution will be assured by the entropy change. As δ_1 approaches δ_2, ΔH_M approaches 0 (Eq. 2); which is equivalent to saying that two substances having the same solubility parameters will be miscible.

Several methods of calculating the solubility parameters of solvents and resins are described by Burrell (7) and Hildebrand (8). Tables of solubility parameters are included in these publications. The solubility parameter of a pure compound can be shown to be a single valued quantity, while that of polymers is best expressed as a range. In the case of alkyd resins, this range is approximately 7—11 The solubility parameter of "Freon-12" has been determined to be about 6.5.

Suitable solvents for enamel formulations were those having solubility parameters in the upper end of the solubility parameter range of the alkyd resin. Aromatic hydrocarbons ($\delta = 9$), ketones ($\delta = 10$), and esters ($\delta = 10$), were examined. Formulations were prepared by dissolving Beckosol 7, a short-oil, soya-modified, alkyd resin in toluene, xylene, methyl ethyl ketone, butyl acetate, Amsco-Solv B-90, Solvesso 100 and Varsol No. 2. As expected, solutions of Beckosol 7 in aliphatic hydrocarbons such as Varsol No. 2 were precipitated with 40% "Freon-12". Aromatic hydrocarbons, ketones and esters allowed dilution with as much as 70% "Freon-12" before coagulation occurred.

Evaporation Rate

A second important characteristic of solvents for aerosol paint formulations is the evaporation rate. Con-

*Du Pont's registered trademark for its fluorinated hydrocarbons.

TABLE I
Effect of Evaporation Rate on Film Properties
(Weight Percent)

Number	Pigment	Resin	Solvent		Propellant	Remarks
	TiO_2		Toluene	Amsco Solv B-90	"Freon-12"	
1	15	15	30	—	40	Severe orange peel
2	15	15	20	10	40	Improved levelling
3	15	15	15	15	40	Improved levelling
4	15	15	12	18	40	No orange peel; no sag
5	15	15	10	20	40	Sagging
6	15	15	0	30	40	Uncontrollable sag

Resin/solvent ratio 1/2
Total solids 30%
Driers 0.06% Cobalt Naphthenate (6% Co)
0.12% Lead Naphthenate (24% Pb)

siderable work has been done on solvent blends for use in air-spraying equipment. It was found that solvent systems designed for use in air guns generally evaporate too slowly for use in aerosol formulations. Evidently, the chilling effect of the evaporating propellant is so great that the evaporation is retarded to the extent that the film characteristics are adversely affected. Of the solvents listed above, Amsco-Solv B-90 and Solvesso 100 showed the most promise. Both, however, produced films with a pronounced tendency to sag. The low-boiling solvents such as toluene evaporated more rapidly from the surface than they diffused from the lower layers. As a result the surface became wrinkled or displayed orange peel. When very low boiling solvents, such as methylene chloride were used, this nonuniform drying became so severe as to cause bubbles and craters. This phenomenon provided a good method of evaluating the evaporation rate of the solvent system. Formulations containing toluene and Amsco-Solv B-90 in varying proportions were prepared. (Table I) When excessive amounts of toluene were present, the paint films displayed surface roughness. When excessive amounts of Amsco-Solv B-90 were used, sagging of the film took place. A mixture of 40% toluene and 60% Amsco-Solv B-90 was found to have the correct evaporation rate for easy application of a good quality film.

The distillation range of this solvent blend is as shown below:

50%	< 230°F.
60%	< 280°F.
70%	< 300°F.
80%	< 320°F.
90%	< 330°F.
100%	< 340°F.

This combination of solvents provided a rapid initial evaporation rate and concomitant increase in viscosity. At the same time, the presence of higher boiling compounds allowed the paint film to dry uniformly through its thickness and to flow out to produce a smooth glossy surface. More rapid setting could be realized by replacing part of the toluene with lower boiling compounds such as methyl ethyl ketone.

It was also observed that the presence of small amounts of high boiling saturated aliphatic hydrocarbons improved the gloss of the final film. There is no apparent explanation for this behavior.

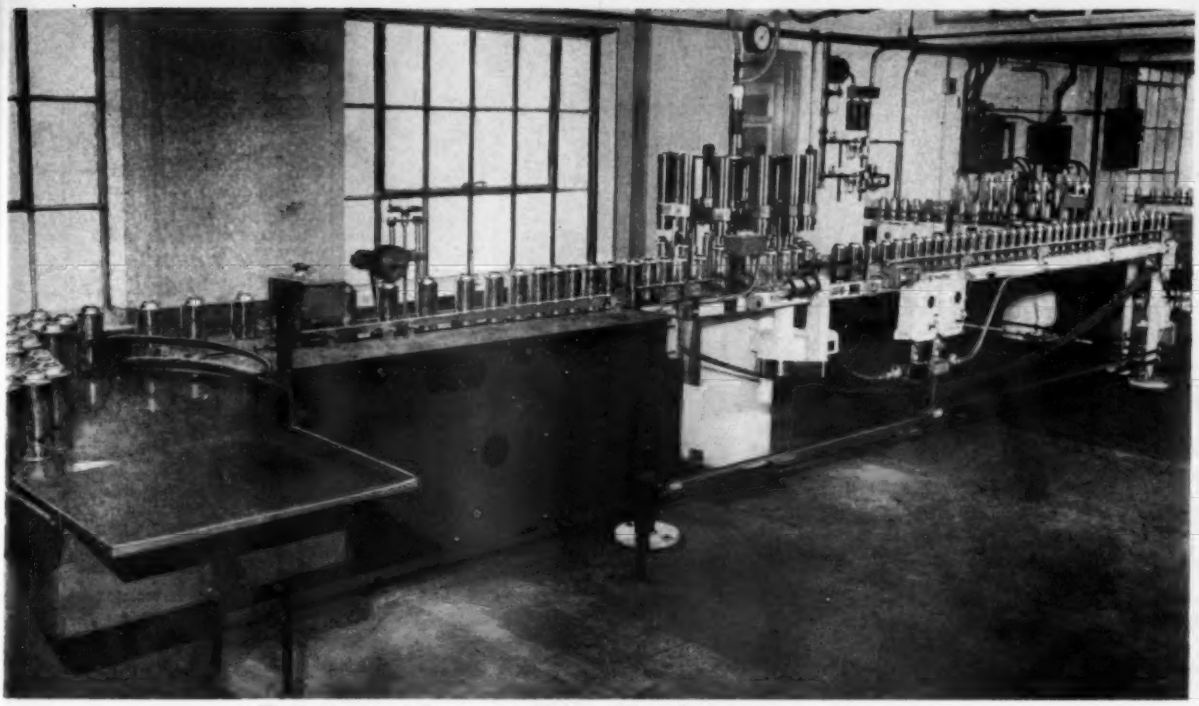
Colored enamels were prepared from the basic formulation (Table I, No. 4) by substituting colored pigment dispersions for part of the white dispersion cited in Table I. Resin concentration in the solvent system remained approximately constant as did the ratio of toluene to Amsco-Solv B-90. Perfectly acceptable results were obtained by this procedure, but best results may require small variations in solvent composition to compensate for small viscosity changes resulting from the altered pigment. Table II shows typical formulations developed by this technique. The formulations described here are elementary in nature, designed to illustrate formulation principles and should not be regarded as

(*Continued on Page* 96)

TABLE II
Colored Enamels Derived From Basic White
(Weight Percent)

Number	Pigment (TiO_2)	Pigment (Phthalocyanine Green)	Pigment (Toluidine Red)	Resin	Solvent		Propellant
					Toluene	Amsco Solv B-90	"Freon-12"
1	3	3	—	18	15	21	40
2	3	—	3	18	15	21	40

Resin/solvent ratio 1/2
Total solids 24%
Driers 0.06% Cobalt Naphthenate (6% Co)
0.12% Lead Naphthenate (24% Pb)



The beginning of the pressure fill line. Other photos appear on front cover.

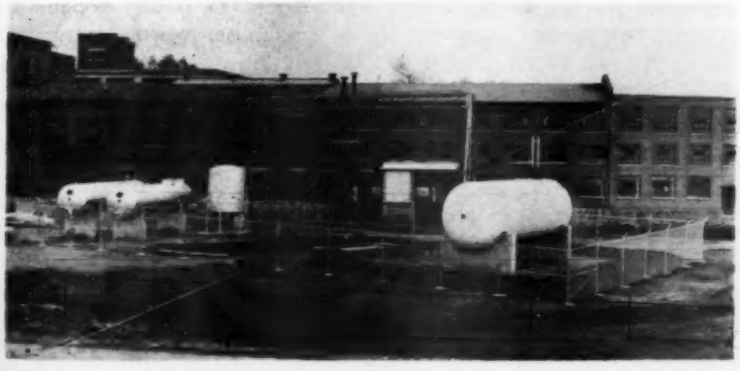
Scranton Aerosol Firm Unveils New Filling Plant

A NEW contract packaging firm has entered the aerosol field.

Called the Scranton Aerosol Packaging Division of the Scranton Corp., the new aerosol division was organized after it was determined by the parent company that the aerosol industry had the highest growth potention of a number of similar industrial activities.

Soon after the decision to go into aerosols had been made, the company was able to acquire the filling equipment of the Bridgeport Brass Co., one of the foremost pioneers in pressurized packaging. Using a former Bridgeport Brass expert as part of the investigative team, a thorough study was made into all phases of conventional cold filling and hydrocarbon filling. By means of this study, the company's management endeavored to bypass previously encountered installation complications, mainly by studying aerosol lines throughout the country. A sizeable capital outlay was appropriated, and over 150,000 square feet of space was set aside at the plant of the Scranton Lace Division of the Scranton Corp.

Concentrate and propellants are stored in these bulk storage facilities outside the plant.



The new aerosol plant will, in its initial operations, have two high-speed production lines. The first of these will be a modern cold fill line with a capacity of 40,000 units per eight-hour shift. The second, a special line to fill butane-propane and other liquefied petroleum gas propellants, will have a capacity of more than 45,000 units per shift.

For the latter line some new safety equipment has been installed, including supersensitive gas detectors that

(*Continued on Page 97*)

Ed McKernan, Seaquist; Robert Horsey, Givaudan-Delawanna; A. F. Breeze, Givaudan (Canada) Ltd. L. J. Frost and J. N. Demsey, Continental Can of Canada Ltd., and Gordon Lang, Connecticut Chemicals (Canada). L. T. Flanner, General Chemical, W. S. McLeod, and C. H. Jefferson, Can. Dept.of Agriculture.

G. W. Heath and Al Mojonnier, Mojonnier Associates, and Ken Mitchell and J. Nichol, Aerocide Dispensers. John Thompson, Dodge & Olcott (Canada), and Herb Kainig, Dodge & Olcott, flank Gordon Lang, of Connecticut Chemicals (Canada). Joseph Pizzurro, Precision Valve, and A. E. Budner, S. C. Johnson & Sons.

Canadian Chemical Specialties Mfrs. Hold First Annual Meeting

NEARLY 200 delegates from all parts of Canada and the U. S. attended the first annual convention of the Canadian Manufacturers of Chemical Specialties Association on November 12-13, thus making the meeting one of the most successful "first" endeavors by an industry trade association in recent history. The Aerosol Division of the association seemed to have the largest numerical attendance at its two forums, and in both meetings filled up its meeting hall entirely.

George E. Flemming, Guardian Chemical & Equipment Co., Ltd., Montreal was elected first president. He will serve the 1958-59 term. Other officers elected were: vice-presidents, G. H. Wood, G. H. Wood & Co. Ltd., Toronto; R. L. Jones, Colgate-Palmolive Ltd., Toronto; secretary, A. Robins, Cartier Chemical Co. Ltd., Lachine, Que.; treasurer, G. S. Lang, Connecticut Chemicals (Canada) Ltd., Toronto; directors R. T. Howard, A. H. Howard Chemical Co. Ltd., Orangeville, Ont.; R. S. Sweet, Success Wax Ltd., Quebec City; John Kennedy, W. Alan Kennedy Ltd., Montreal; G. V. Jansen, S. C. Johnson & Son Ltd., Brantford, Ont.; H. J. Chamberlain, Canadian Germicide Co. Ltd., Toronto; J. Gordon Clough, Clough Chemical Co. Ltd., St. Johns, Que.; and A. H. Carter, Green Cross Products, Montreal. Michel Chevalier was appointed secretary-manager.

George Flemming, CMCSA president, and James Ferris, president of CSMA.

In his presidential address, Mr. Flemming pointed out that until the formation of the CMCSA, there was no representative association in Canada of companies in the chemical specialty manufacturing field. "The process of government which initiates legislation have had no reponsible instrument to direct, guide or counsel them in their deliberations. One of the purposes of establishing an association is to consolidate the ideas of a majority of people in a specific industry so that errors are eliminated or diminished, and the consumer is benefited by a combination of correct forces rather than an individualistic approach."

Mr. Flemming outlined the history of the founding of the new association, and paid particular tribute to the Chemical Specialties Manufacturers Association and its secretary H. W. Hamilton, for their assistance in the establishment of the Canadian group. "To say that we are an inde

pendent association is true, but it must be borne in mind that we were given the opportunity to participate in the background of, shall I say, research and development of an association which was founded as far back as 1922. The pitfalls attendant to the founding of the new association were avoided to a great extent by the advantages of experience inherent in the CSMA under Dr. Hamilton's leadership."

Mr. Flemming declared that the executive committee of the association was making a special study of Tariff Reference 120. "The Tariff Committee of the basic chemical manufacturers in Canada, consisting of 12 members, during the early summer advised us that they had prepared, over the past year and one-half, a thorough report on the status of chemical manufacturing in Canada and its implied impact on all sections and levels of our chemical economy." He said that the CMCSA committee was in the process of evaluating the force of changes, either major or minor, on specialty manufacturers in Canada.

"An idea of the immense value of this committee's approach to the industry was the collection of all products imported or manufactured in Canada related to the Brussels Nomenclature. Our group decided that the Brussels Nomenclature Division of products in this classification was advisable and we are generally in agreement that classifications of all chemicals should in the future be indexed by this Nomenclature."

Newly-elected board of directors of the Canadian Association includes, from left to right: (seated) G. S. Lang (treasurer), Connecticut Chemicals (Canada) Ltd.; R. L. Jones (vice-president), Colgate-Palmolive Ltd.; G. E. Flemming (president), Guardian Chemical & Equipment Co. Ltd.; G. H. Wood (vice-president), G. H. Wood & Co. Ltd.; A. Robins (Secretary), Cartier Chemical Company Ltd.; (standing), G. V. Jansen (director), S. C. Johnson & Son Ltd.; John Kennedy (director), W. Alan Kennedy Ltd.; A. H. Carter (director), Green Cross Products; R. T. Howard (director), A. H. Howard Chemical Co. Ltd.; H. J. Chamberlain (director), Canadian Germicide Co. Ltd.; R. S. Sweet (director), Success Wax Ltd.; and J. G. Clough (director), Clough Chemical Co. Ltd.

Mr. Flemming reported that W. Ferguson is acting as the association's tariff consultant, and that liaison is continuing between the CMCSA committee and the tariff group of the chemical industry.

The tariff question, Mr. Flemming indicated, is only one of five separate areas in which the association will concern itself. The others are traffic, technical studies and combined research, legislative (apart from matters concerning tariffs), and liaison with governmental research.

Two government speakers, C. H. Jefferson of the Plant Products Division, Dept. of Agriculture, Ottawa; and W. S. McLeod, Pesticide Testing Laboratory, Dept. of Agriculture, Ottawa; amplified this last point in some detail.

Mr. Jefferson, who is familiar to members of the CSMA because of the various talks he has given at annual meetings of the Insecticide and Aerosol Divisions, declared that the principal difficulty in Canada with registration of household pesticides stems from:

1. Insufficient formulation data or misinterpretation of existing rules on the subject.

2. Lack of information (on basic procedures) by the marketer.

3. Attempts to be *just within* the limit of the law.

He outlined the registration procedures carried out by the Canadian Dept. of Agriculture's Plant Products Division, and cautioned that certain provincial governments (Ontario, Al-

(*Continued on Page* 95)

John Stoddard, Prentiss Drug & Chemical; George Flemming (president of the CMCSA), Guardian Chemical; and A. H. Carter, Green Cross Products, Ltd.

L. T. Flanner, General Chemical; Ed McKernan, Seaquist; J. E. Lee, McLaughlin Gormley King; Phil Sagarin, VCA; and Earl Graham, Clayton.

The Formulation of

Aerosol Products*

By Grant L. Armstrong
Technical Service Representative,
"Freon" Fluorinated Products,
Du Pont of Canada, Ltd.,
Kingston, Ont.

THE aerosol package is generally regarded as a simple adaptation of a common product to conform with our modern "push-button" style of living. To the uninitiated or average consumer, this may be a natural conclusion. Unfortunately, this is far from being true, as potential aerosol marketers rapidly discover.

The development of most aerosol products requires an organization with a sound theoretical and practical background in all phases of chemistry, along with a thorough knowledge of pertinent economic and regulatory standards. Also, a good understanding of commercial loading methods and plain ordinary common sense can by no means be omitted. In other words, it is essential that the potential marketer be well versed in the technical and marketing principles of the aerosol industry.

Basic Formulation Systems

One of the first considerations in an aerosol product development project is the choice of propellant type, since it is the propellant which decides many of the major characteristics of the final aerosol product. In Figure I, the basic types of aerosol formulation systems are related to the various types of propellants.

Liquefied and non-liquefied gases are the two major propellant classifications. Both types have certain advantages and limitations, and in almost all cases they *will not* give an aerosol product with similar characteristics.

The non-liquefied propellants may be further broken down into two subclassifications: those which are essentially insoluble in the active product, and those which have definite though fairly low solubilities. The insoluble gases are suitable for dispensing paste ribbons, and liquid streams or drops, with such products as toothpastes, syrups, and vitamins. Nitrogen is the common propellant of this type, although in certain cases helium, argon, and krypton may prove to be advantageous. Since these propellants are essentially insoluble, no aeration occurs during the dispensing operation to change the physical characteristics of the active product. On the other hand, the slightly soluble gases, such as carbon dioxide and nitrous oxide, are suitable for use in certain products where some aeration is desired in order to produce wet forms or wet sprays. Typical products in this classification are whipped cream and salad dressing. With the aerosol valves presently available, it is impossible to produce highly atomized space type sprays or extremely stable foams having a fine bubble structure with any of the non-liquefied propellants.

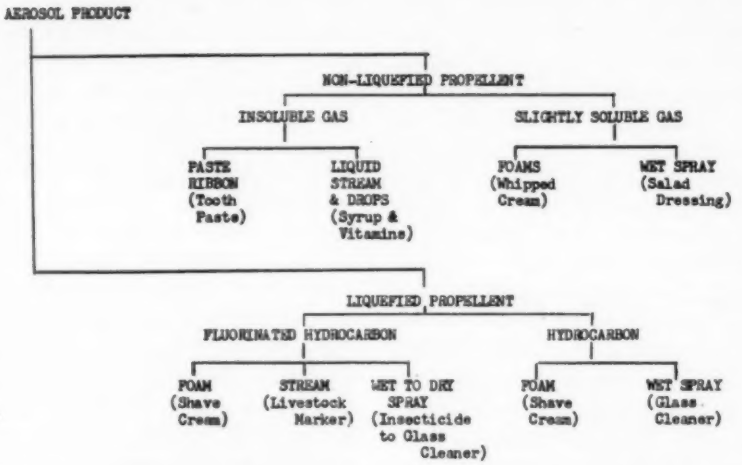
The liquefied propellants also fall basically into two sub-classifications, the hydrocarbon gases and the fluorinated hydrocarbon compounds. Other liquefied gases such as vinyl chloride are not ordinarily used as propellants on this continent, although chlorinated solvents such as methylene chloride and methyl chloroform, which act as vapor pressure depressants, are used for some products.

The hydrocarbon gases presently utilized as propellants are propane, normal butane and isobutane. They are very flammable compounds and under current shipping regulations only small amounts can be used in aerosol products. However, with non-flammable water based concentrates, foams and wet sprays can be produced. For spray products, specially designed mechanical break-up valves must be used to compensate for the low propellant compositions.

The fluorinated hydrocarbon propellants are non-flammable compounds and their use is not limited to water based products which result in foams or wet sprays. With these propellants, wet to dry sprays, liquid streams, and foams of varying stability and texture can be readily produced. Common propellants of this type are trichloromonofluoromethane, dichlorodifluoromethane, and dichlorotetrafluoromethane, which under the Du Pont trademark system are referred to as "Freon-11", "Freon-12" and "Freon -114", respectively. In a very limited number of products trichlorotrifluoroethane, "Freon-113" and monochlorodifluoromethane "Freon-22", are also used as aerosol propellants.

FIGURE I

AEROSOL FORMULATION SYSTEMS



* Presented at the first annual meeting of the Canadian Manufacturers of Chemical Specialties Association at Montreal, Que., on Nov. 14, 1958.

Unfortunately, it is not within the scope of this paper to discuss the formulation of aerosol products with all types of available propellants. So, from this point on, only fluorinated hydrocarbon propellant systems will be considered.

Fluorinated Hydrocarbon Propellants

A good knowledge of the physical and chemical properties of the propellants is of prime importance to the product formulator. In Figure II, some of the basic properties of the three common fluorinated hydrocarbon propellants have been summarized.

The "Freon" propellants are all halogenated derivatives of the hydrocarbon gases, and it is this replacement of hydrogen atoms by chlorine and especially fluorine atoms that gives them their unique characteristics. They are all stable, non-flammable, essentially non-toxic, and non-corrosive to common fabrication materials. Their hydrolysis rates are exceptionally low, much lower than the rates of non-fluorinated halogen derivatives of hydrocarbon gases. Of the three compounds, only Propellant 11 is not recommended for use in water based aerosol products, but for certain emulsion systems even this compound, which is much less stable than Propellant 12 and Propellant 114, can be suitable for use with water based products. With respect to inhalation toxicity, it might be mentioned that all three have been found less toxic than carbon dioxide which we are continuously exhaling out of our lungs.

The vapor pressures of the three propellants at normal temperatures are fairly low, which allows them to be used in low pressure containers. By the use of various solvents and "Freon-11" or "Freon-114" with "Freon-12", the range from 0 to 70 p.s.i.g. at 70°F. can readily be attained. And unlike a non-liquefied propellant where the pressure in the container drops as the product is discharged, the fluorinated hydrocarbon propellants provide an essentially constant pressure throughout the complete usage life of the product. A liquefied propellant not only provides the "push" that forces the product out of the container, but also creates considerable atomization of a spray product at the discharge point due to propellant flashing.

The fluorinated hydrocarbon propellants have low viscosities but fairly high densities. Their low viscosities assist in producing sprays with relatively viscous materials. Their high densities can be very valuable in the formulation of stable powder dispersion products, as we will see later on.

These propellants are soluble in, and are solvents for, a wide variety of organic compounds. Most common organic solvents are miscible with them in all proportions. Compounds with similar chemical structure, such as the hydrocarbons and halogenated compounds, are usually completely miscible with the fluorinated hydrocarbon propellants over a wide range of temperatures. Highly polar solvents such as the glycols and water have very low solubilities. The individual propellants differ considerably in their solvent properties depending

FIGURE II
COMMON FLUORINATED HYDROCARBON PROPELLANTS

	"Freon-11"	*"Freon-12"*	*"Freon-114"*
Formula	CCl_3F	CCl_2F_2	$CClF_2$-$CClF_2$
Molecular Weight	137.4	120.9	170.9
Boiling Point (°F.)	74.8	—21.6	38.4
Pressure at 70°F. (p.s.i.g.)	—1.3	70.2	12.9
Liquid Density at 70°F. (gms/c.c.)	1.485	1.325	1.468
Liquid Viscosity at 86°F. (Centipoise)	0.405	0.251	0.356
Hydrolysis Rate with Steel (gms/liter/year)	19.0	0.8	1.4
Flammability	Nonflammable	Nonflammable	Nonflammable
Toxicity	5 A	6	6
K.B. Number	60.1	18.0	11.8
Solubility in Water at 1 Atm. and 77°F. (Wt. %)	0.11	0.028	0.013
Solubility of Water at 86°F. (Wt. %)	0.013	0.012	0.011

upon their molecular weight and the number of chlorine atoms in the molecular weights or lower ratios of fluorine to chlorine atoms in the molecule have better solubility properties. The addition of hydrogen atoms tends to increase the propellant solubility toward polar compounds like water and glycols. Thus, if "Freon-113" and "Freon-22" are included, the following order of decreasing solubility power is usually observed: "Freon-11" > "Freon-113" > "Freon-22" > "Freon-12" > "Freon-114". The kauri-butanol values also can be a reasonably reliable index and reveal the same relative solubility positions. Although a great deal of general solubility data is available for the "Freon" propellants, it is found that in many cases for multi-component liquid mixtures specific solubility data must be determined experimentally.

Formulation Systems

Formulation systems can be generally subdivided according to the type of discharge, as sprays, streams, and foams.

A. *Spray Systems*

At least four distinct types of sprayable systems can be used by the product formulator with fluorinated hydrocarbon propellants. The aerosol product formulation may be completely miscible, contain a dispersed solid, have two separate liquid layers, or be in the form of an emulsion.

(1) *Soluble Types*

With the most common type of aerosol formulation, the liquid propellant and product are completely miscible. Insecticides, room deodorants, hair sprays, colognes, and many others are well known products of this type. In many cases, the active components are not completely soluble in the propellants alone, but require the use of auxiliary solvents like the alcohols, ketones, esters, petroleum distillates, and chlorinated solvents. Due to the extremely low miscibility of water with the propellants, water based products cannot be formulated on this basis. Solubility relationships are an important aspect to consider in this type of aerosol product. However, within the solubility limitations, spray products with greatly varying discharge characteristics can be prepared. By either increasing the total amount of propellant or the ratio of low to high boiling propellants, drier and more highly atomized sprays can be produced, and vice versa. In some cases, however, these changes *do not* produce similar discharge characteristics, especially where the sprays are directed on targets rather than into the air as space type sprays. With such surface sprays, increasing the ratio of high boiling propellant may result in target foaming, bubbling, running, or excessive coolness. Valve drooling, some times encountered with viscous products, may also be enhanced by increasing the proportion of high boiling propellants. On the other hand, either increasing the ratio of low to high boiling propellants or increasing the total amount of propellant may result in solubility problems for such products as paints. Thus, in many cases, considerable study of the solubility properties of the proposed formulation is necessary before an economically feasible product suitable for commercial loading and usage, within the regulatory limitations presently in force, can be developed.

(2) *Dispersion Types*

Aerosol products of this type are often more difficult to prepare than completely miscible formulations, but in some cases due to the nature of the active components other formulation alternatives cannot be used. A good knowledge of surface chemistry can be extremely valuable to the aerosol formulator when dealing with dispersion systems.

One of the first aspects to consider is the size of the solid particles. Usually, the particles should be no larger than 40 to 50 microns and it is preferable that the majority of the particles be 10 microns or less in diameter. With the solid ground to a suitably fine powder, the next major problem is to prepare a stable aerosol formulation which will not result in any agglomeration over the estimated total life of the product.

There are several general methods which may aid in preventing powder agglomeration. One which is often useful in such systems involves adjusting the densities of the powder and dispersion mediums to approximately the same value. By the use of various solvents and combinations of the high density propellants, this may be fairly easy to do. This balancing of densities decreases manyfold the rate of setling or creaming of the solid particles, as the case may be. Naturally, there are limitations to such density adjustments because the final formulation must have a suitable amount and type of propellant mixture to produce the desired spray characteristics.

Another tool in the preparation of stable dispersion systems involves the use of agents which inhibit powder agglomeration. Such agents are believed to act either by forming a colloid coating on the particles or by attaching themselves in such an orderly fashion that all the powder particles either become slightly electropositive or electronegative in nature and thus repell each other. Usually, the chemical composition of the powder will assist in choosing appropriate suspending agents. However, even with the aid of such knowledge, it is found that dispersion agents can be very specific in their action. With some insoluble powders, stearyl alcohol can be effective, and in a few cases, other fatty alcohols and relatively short chain surface active agents of low foaming power are useful. It has also been reported that isopropyl myristate can be beneficial. For solids having definite solubilities in the dispersing medium, the lower alcohols such as isopropanol may be quite effective in preventing the formation of large crystals. In such cases, the solid must usually be first completely dissolved in the hot suspending medium and the inhibitor added to the solution before cooling takes place. Waxes can often be suspended satisfactorily by this method in hydrocarbon solvents.

The choice of valve is extremely important when dealing with dispersion systems. The powder particles

(*Continued on Page* 107)

The Evolution of

Aerosol Valves*

By Joseph C. Pizzurro
Technical Director
Precision Valve Corp.
Yonkers, N. Y.

IT HAS been aptly demonstrated that a valve cannot be employed indiscriminately to dispense pressurized products, and must have modifications in construction materials and design. The dispensing characteristics required for various products, and the nature of the products themselves, would often necessitate such modifications.

Contemporary low pressure aerosol valves differ greatly from the high and low pressure valves initially offered to the industry during its earliest years. The first and only aerosols were insecticides packaged with the high pressure propellant "Freon 12" in a container capable of withstanding the much higher pressures of elevated temperatures. At that time, valve manufacturers primarily had one problem to consider; that is, to design and construct a valve suitable for spraying a homogeneous mixture of insecticide concentrate and propellant. It is common knowledge that although only one type product had been presented for dispensing under pressure, a certain amount of trouble was encountered due to the lack of research and previous experience in designing and constructing aerosol spray valves.

With the advent of low pressure aerosols in 1947, the principle of pressurized dispensing became feasible for many products, although insecticide was still the chief aerosol product and consequently valve manufacturers made only slight modifications in the high pressure aerosol valves for adaptation to low pressure aerosols. However, about a year later, it became quite evident that major changes in aerosol valves would be necessary before other products could be packaged successfully. Attack on valve parts by products such as hair lacquers, shave creams, deodorants and anti-perspirants necessitated changes in materials of construction from metals to plastics such as nylon. Spray patterns and particle size requirements brought about variations in button orifice sizes and shapes. Changes in elastomeric materials were required due to the use in some products of solvents which caused either excessive swelling or shrinkage of the rubber parts. Shave creams, hand creams, shampoos, etc., which at that time called for the formation of a foam, required the designing of revolutionary actuators. Ease of operation, appearance and function were all factors in the design of these dispensing heads. Three-phase and low-propellant-content aerosols led to the development of mechanical breakup valves and actuators.

COMPRESSED gases have recently entered the aerosol scene, thus making it possible to pressurize products such as dental creams, stream-dispensed hair preparations, cosmetic creams, foods, pharmaceuticals and detergents. This brought about additional valve design changes and the search for more suitable materials of construction.

This ten-year development has demonstrated that there is not a universal aerosol valve suitable for all products. Valves, like the other components of the package, must be tailored to the formulation and its principle.

Valve research has received a great assist from all parties concerned with the development and successful packaging of pressurized products. Many aerosol valve developments have been facilitated and expedited by modifications in formulations and packaging techniques without detriment to the end function of the product. The cooperation of can companies, contract packers, merchandisers, propellant manufacturers and valve manufacturers in the solving of past problems has made possible the present great variety of pressurized products available to the consumer market.

The question of how an aerosol valve manufacturer solves the problem of achieving the ideal valve for a product may best be answered by considering the following:

1. Selection of proper elastomers
2. Designing for specific delivery rates
3. Designing valves for glass bottles
4. Designing valves for three-phase and low-propellant-content aerosols
5. Designing valves for dry powder sprays.

In many aerosol valves, the gasket is one of the most critical parts, if not *the* most important. Its compatibility with the product many times is the difference between a good or defective unit. The ideal elastomer is one which neither swells excessively nor shrinks when in contact with the product. Excessive swelling of the valve gasket results in loss of actuation stroke, leading eventually to an inoperable valve. Shrinkage is usually accompanied by a hardening of the gasket and loss of resiliency which often results in leakage because of consequent improper scaling. For many years valve manufacturers have investigated the effect of existing products on most available elastomers, and many have been found suitable for a particular class of solvents but highly unsuitable in the presence

*Presented at the first annual meeting of the Canadian Manufacturers of Chemical Specialties Association at Montreal, Que., on Nov. 14, 1958.

of other solvents. To date, Buna N and Neoprene are the most compatible with existing formulations. The search has always been for a universal elastomer; however, this ideal has not been accomplished and the search will continue for a completely satisfactory material.

Specific delivery rates have been stringent requirements for many products. Research in product effectiveness has indicated that different products require different delivery rates. As a matter of fact, rate of delivery has become such an important factor in most products that rival companies marketing identical products now often request different rates for their products depending on what their research departments feel is the most satisfactory. For example, the rates of delivery for space insecticides now vary from 0.80 grams per second to 1.20 grams per second at 70° Fahrenheit.

One may ask "how can the valve manufacturer cover this broad range of deliveries?" It has not been a simple task. Through long hours of research and development the valve manufacturer has been able to satisfy these requirements. There are three principal controlling orifices in the construction of most aerosol valves. These are the valve body orifice, the valve stem orifice, and the valve button orifice. By-combining different sizes for these three valve orifices, a broad range of deliveries can be covered. In addition, new manufacturing techniques have been developed, and more scientific means of inspection adopted, so that the valve manufacturer can assure his customer of constant and uniform performance.

For a period of time progress with aerosol glass packages was slow due to various reasons, one of which was valves. Eventually an entirely new container was presented to the aerosol industry for packaging consideration, but this package needed suitable valves before it could be marketed. The valve manufacturer was confronted with a package which necessitated an entirely different design than what had previously been used. The valve had to be affixed to the container by a method not common to the aerosol industry. This meant much research for the valve manufacturer to develop a suitable type ferrule which would hold the valve onto the bottle. The ferrule had to be manufactured to the dimensional specifications of the bottle, and a suitable material had to be selected to assure a tight and permanent seal onto the bottle.

Aluminum was the initial choice of most valve manufacturers as the logical metal of which to make the ferrule because of its ease of being sealed onto a bottle. Later one manufacturer, because of leakage experience, developed a steel ferrule. This leakage was attributed to aluminum fatigue which caused the seal of the valve onto the bottle to become loose.

In future issues, *Aerosol Age* will carry the complete text of the other two aerosol papers given at the CMCSA meeting. These include "The Role of Silicones" and "Metal Aerosol Containers".

The glass bottle had been advanced as a suitable package for products which could not be packaged in metal containers due to their attack on steel: hence, the valve manufacturer had to use materials of construction which were inert to these products. Most bottle valve parts are made of plastic and stainless steel which to date have been found very serviceable with most products. Although the basic material being used for the sealing ferrule may be attacked by the product, this does not become a factor since the design of most aerosol bottle valves is such that there is no internal contact of product and ferrule.

The possibility of exterior attack of the ferrule by the product has been eliminated by the use of appropriate coatings and finishes. Examples are the use of anodized aluminum and clear solvent-resistant lacquer over brass-plated steel. With these valve developments, along with developments by the container manufacturer, the aerosol bottle is coming into its own as a suitable aerosol package.

Several years ago a new era of the pressurized industry began with the development of three-phase and low-propellant-content aerosols. Where once the breakup of product to fine particles was achieved mainly by the propellant, now the valve was called upon to help achieve the desired breakup. This was especially true in three-phase aerosols where the concentrate is water based. Here the propellant phase is insoluble in the concentrate and acts strictly as a means to develop pressure for the dispensing of the active ingredients. Hence, on opening the valve, the material coming from the container is, strictly speaking, only product with no propellant admixed.

Using ordinary aerosol valves for this type product would produce a jet stream of liquid with no apparent breakup. The type spray pattern desired was a relatively fine mist such as is obtained with a garden hose nozzle when it is in the almost closed position. The problem was solved by what is called a three-phase actuator or mechanical breakup actuator. The principal function of these actuators is to dispense the ingredients as a fine mist. This is accomplished by a small passage or series of small passages leading into a swirl chamber which allows the concentrate liquid to move in a circular pattern at a high velocity. The swirling concentrate then exits through the external orifice into the atmosphere as a fine mist.

Actuators of this type opened a new field of thinking in formulating aerosol products. Compatibility of propellant and concentrate was no longer necessary to obtain a desired spray pattern. Although these actuators make possible a reduction in the amount of propellant formerly necessary for correct product breakup, they may never achieve the breakup required for products such as space insecticides, where a very small particle size is necessary for true effectiveness.

Another item which demanded the valve manufacturers' prompt attention was the dry powder aerosol. Many problems confronted the valve

(*Continued on Page* 101)

CSMA, Meeting Dec. 8-10, Schedules Strong Aerosol Program to Mark Anniversary

THE Chemical Specialties Manufacturers Association, at its 45th annual meeting scheduled for New York's Hotel Commodore, Dec. 8-10, will mark the tenth anniversary of the Aerosol Division. Highlight of the event will be an "Aerosol Supermarket," scheduled for 6 p.m. on Monday, Dec. 8, which will have on display the wide variety of aerosol product types. The supermarket, sponsored by the Division's publicity committee, will be the principal feature of a special press party for editors of the consumer press, and after 6 will be open to convention registrants.

Another special feature of the aerosol part of the program will be the announcement of the winners of the aerosol package awards contest on Tuesday, Dec. 9 at the luncheon session. This year's contest will include the category of "Food Products" for the first time, a change by the awards committee in recognition of the growing importance of pressurized food products.

The Wednesday morning general session of the meeting will include addresses by Dr. Leona Baumgartner, Commissioner of Health, City of New York; Dr. Leroy E. Burney, Surgeon General, Dept. of Health, Education and Welfare, Public Health Service; and George P. Larrick, Commissioner of Foods and Drugs, Food and Drug Administration. The address by Mr. Larrick is expected to draw a particularly heavy attendance because of recent hints by the FDA that it will crack down on misleading or fraudulent advertising and label claims in the toilet goods field. Earlier this year Mr. Larrick hinted that the FDA might take over some of the label and advertising policing duties presently carried on by the Federal Trade Commission.

The luncheon speakers for the meeting are Osgood V. Tracy, vice-president of Esso Standard Oil Co., New York (on Tuesday, Dec. 9); and Fred C. Foy, president and board chairman of Koppers Co., Pittsburgh.

The program of the two Aerosol Division sessions (the first on the morning of Tuesday, Dec. 9) and the second on the afternoon of Wednesday, Dec. 10—list more than the usual numbers of papers this year. Food products, fragrances, and the impact of aerosol advertising on the consumer public are the three principal topics scheduled for the first meeting.

The session on the afternoon of Dec. 10 will hear papers on safety,

Program Schedule

MONDAY, DECEMBER 8
Board of Governors' Meeting
Aerosol Division Administrative Meeting
Aerosol Scientific Meeting

TUESDAY, DECEMBER 9 (Morning)

Aerosol Division

"Address of the Division Chairman," Earl Graham, Clayton Corp., St. Louis, Mo.
"Report of the Chairman, Scientific Division," J. J. Buchanan, Continental Can Co., Chicago.
"Role of Aromatics and Fragrances in the Aerosol," Victor DeGiacomo and E. R. van Liew, Givaudan-Delawanna, Inc., New York.
"Food Aerosol Custom Filling," Clarence Clapp, Western Filling Corp., Los Angeles.
"The Impact of Aerosols on Advertising of Consumer Products," Joseph T. Tomlinson, General Chemical Division, Allied Chemical Corp., New York.
"Annual Aerosol Product Survey," A. H. Lawrence, E. I. du Pont de Nemours & Co., Wilmington, Del.

Insecticide Division

"Address of the Division Chairman," John A. Rodda, Fairfield Chemical Division of Food Machinery & Chemical Corp., New York.
"Action of Irradiation on Bacteria and Fungi," John D. Hilchey, Pesticide Section, Quartermaster Research and Development Center, Natick, Mass.
"Insecticide Materials Symposium" (moderator—A. C. Miller, Gulf Research and Development Co., Pittsburgh).
J. B. Moore, McLaughlin Gormley King, Minneapolis.
G. A. Neumann, Union Carbide Chemicals Co., New York.
E. T. Snipes, Chemagro Corp., New York.
S. A. Hall, USDA.
R. C. Back, Union Carbide Corp.
D. M. Baldwin, Dow Chemical Co., Midland, Mich.
"Report of Chairman, Scientific Committee," Harry L. Haynes, National Carbon Division, Union Carbide Corp.

WEDNESDAY, DECEMBER 10 (Afternoon)

Aerosol Division

"Success With Safety," Roy M. Barnes, E. I. du Pont de Nemours & Co., Wilmington, Del.
"The Determination of Skin Chilling Effects of Various Propellants and Mixtures in Different Solvent Systems," T. F. Dunne, General Chemical Division, Allied Chemical Corp., New York.
"Aerosol Surface Coatings, With Emphasis on Determination and Value of Viscosity of Such Systems," W. B. Leighton, Union Carbide Chemicals, New York.
"Viscosity/Pressure/Time Factors in Dispensing Aerosol Liquids," Francis A. Mina, Lodes Aerosol Consultants, Inc., New York.
"Aerosol Aspects of Toiletries and Cosmetic Research," Donald H. Powers, Lambert-Hudnut Division, Morris Plains, N. J.

aerosol surface coatings, toiletries, and two other papers that could be classified in the pharmaceutical category. T. F. Dunne, of the General Chemical Division of Allied Chemical Corp., will speak on "The Determination of Skin Chilling Effects of Various Propellants and Mixtures in Different Solvent Systems," a subject of extreme importance for development and research on aerosol topical pharmaceuticals. Dr. F. A. Mina, of Lodes Aerosol Consultants, New York, will speak on "Viscosity/Pressure/Time Factors in Dispensing Aerosol Liquids."

As has been the custom at three-day sessions, the company "Open House" is scheduled for the evening of Tuesday, Dec. 9; and the banquet and entertainment are both scheduled for the evening of Dec. 10.

The association's 45th meeting already gives indications of being the best attended meeting in the history of the association. Advance registrations and hotel reservation requests have brought to well over 1000 the estimated number of registrants, and a good number of wives are also expected to be in attendance at the social events.

A number of aerosol delegates not in committee meetings on Dec. 8 have plans to attend the meeting of the Scientific Session of the Toilet Goods Association, which will be held in the nearby Waldorf Astoria Hotel. Included on the program of this association is a paper entitled "Inhalation Effect of Hair Sprays on Test Animals."★

Crown Can Releases New Data on Optimum Product Shelf Life

"DETERMINATION of optimum shelf life and proper inventory control practices are vital in pressure packaging of foods, which promises a phenomenal growth in the decade ahead," George S. Congdon, manager of technical services, Can Division, Crown Cork & Seal Co., Philadelphia said recently in reporting the results of an exhaustive survey on pressurized packages for food products.

"Because the pressure package requires technical considerations other than those concerned with conventional packaging of food, technologists have had to abandon many packaging ideas and consider much shorter shelf life so that consumers can have foods in pressurized containers with all the inherent advantages of metal packages," he continued.

"Sales of whipped cream and synthetic toppings, now accepted food specialties in the American home, approach 75 million units a year. The fact that they have an optimum shelf life of six to eight weeks has not been detrimental at all. Packers of these products have developed strict inventory controls for successful packaging and handsome profits. To achieve this enviable position, rigorous education of distributors and retail outlets was necessary. Similar programs of education and inventory controls must be practiced by packers of other pressurized foods with limited shelf life."

"Because of a number of variables involved in the pressure packaging of food, it is hazardous to generalize on the expected optimum shelf life of a specialty food product," warned Mr. Congdon. Principal of these variables are the nature of the product itself and its natural resistance to physical, chemical, enzymatic or bactoriological breakdown; as well as variations in the pressure can, valve mounting cap and valve; available coatings and propellants. He pointed out that available protective organic coatings have helped overcome some problems of packaging certain foods which by their very nature tend to make them corrosive to metal.

Mr. Congdon cautioned that each packer has a different formula for his food product, which can vary the corrosiveness of the product. Full evaluation will determine whether refrigerated storage will be required, for best product stability. However, many pressurized foods *can* be stored satisfactorily at room temperatures.

"Based on realistic studies, we feel that we are safe in stating that the optimum shelf life of certain pressurized food specialties may be anticipated according to the list below. This list is not all-inclusive, however, it shows the many pressurized food specialties which have been developed and can be pressure packaged under suitable conditions of inventory control.

Pressurized Food Product	*Optimum Shelf Life*
Refrigerated Storage	
Whipped Cream	6 to 8 weeks
Synthetic Toppings	6 to 8 weeks
Cheese Dressing	8 to 16 weeks
Pancake Batter	6 to 12 weeks
Ice Cream Mix	8 to 12 weeks
Sour Cream	6 to 8 weeks
Concentrated Coffee	Max. 3 months
Fruit Flavored Syrups	6 months to 1 yr.
Chocolate Syrup	8 months to 1 yr.
Cheese Dressing	1 to 3 months
Barbecue Sauce	6 weeks to 6 months
Mayonnaise	3 to 6 months
Marshmallow Topping	6 months to 1 yr.
Meringue	3 to 6 months
Peanut Butter	6 to 12 months
Cake Frostings	6 to 12 weeks
Catsup	3 to 6 months
Mustard Dressing	6 to 12 months
Cooking Oil	Up to 1 year
Maple Syrup	1 year
French Dressing	6 weeks to 3 months
Food Pastes	3 to 6 months
Soy Sauce	3 to 6 months
Meat Tenderizer	6 to 12 months
Liquid Smoke	6 to 12 months
Worcestershire Sauce	1 to3 months

"To some in the food packaging industry the generalized optimum shelf lives above may appear to be too short. However, these estimates are based on presently available can manufacturing materials and without any major modification of the formulation of the product from that acceptable as now packaged. We are confident that rapid progress will be made in extending the shelf lives of these and other food products through continuing technological improvements in the metal container manufacturing industry and basic formulations of food specialties."★

EDWARD GREEN
President

WALTER O'NEILL

JOE GREGORY

ROBERT OLLEN

SAM COPIA

HOWARD POUND

WILLIAM STOEPKER

The NEWMAN-GREEN Aerosol Valve Team

Wishes You A Very Successful 1959

It has been a pleasure and a privilege to serve you during 1958. The Newman-Green creative staff believes that a product is no better than the people who produce it, and we pledge ourselves to continually trying to increase the built-in advantages and quality of Newman-Green's valves.

NEWMAN-GREEN *Creative Aerosol Valve Engineering*

151 Interstate Road, Addison, Illinois

Panel of Aerosol Experts Speaks Before New York Corporate Association

Bob Hollister, Gus Lawrence, Gilbert Miles, Earl Graham, and Charles Beach. In the lower photo Earl Graham holds up an old-style high pressure "bomb".

A PANEL of aerosol experts addressed a new and varied audience in New York late last month. The Association for Corporate Growth and Diversification, a group comprising new product managers, and key research and sales personnel from 60 leading companies, heard a panel made up of W. Earl Graham (Clayton Corp.), Gilbert Miles (Colgate-Palmolive Co.), Robert Hollister (American Can Co.), Charles Beach (John C. Stalfort & Sons) and A. Lawrence (DuPont) give a detailed introduction to the subject of pressurized packaging. Subject of the panel was "Aerosols—The Current Status and Future Potential" and it was given at the association's monthly luncheon at New York's Plaza Hotel on Nov. 18.

Mr. Graham traced the history of the industry from the high-pressure insect "bombs" of 1944 to the quality packaged products of today. The industry of today has advanced so far, he pointed out, that "No household can be considered complete without a wide variety of aerosol products." He predicted that the development and market introduction of new products would bring the total aerosol market to one billion containers by 1962 or possibly even by 1960. As possibilities for major new sellers Mr. Graham suggested shampoos, personal deodorants, furniture polishes, and hand lotions, but cautioned that previous industry experiences indicate that the best selling product in 1960 may come from a product not even contemplated yet for aerosol packaging.

Mr. Graham estimated that 39% of the total dollar volume of insecticides is going to aerosols, 67% of the room deodorants, 60% of shaving creams, 47% of colognes, 5% of pharmaceuticals, and about 2% of shoe polishes. Hair sprays, the largest selling aerosols, he pointed out, were commercially insignificant prior to the introduction of the pressurized package.

The aerosol has one limitation that may be overlooked in any superficial examination of the field, Gilbert Miles declared. This is the fact that the price of the valve, container, propellant, and filling dictate that the product must be sold at a minimum retail price, and that it is neither practical nor economically feasible to package a wide range of product sizes such as is being done in the conventional non-aerosol cold creams, face powders, etc. He pointed out that because of this the marketer of cosmetics cannot take a wide range of products and then duplicate them with a corresponding aerosol product line. He cited toothpaste as an example of this restrictive feature.

"The two chief factors that govern the market success of a product," Mr. Miles declared, "are the service it offers the consumer and the frequency of use of the product." This last factor, he suggested, might preclude the chances of success of a product such as shampoo, which probably isn't used frequently enough (or with enough inconvenience to the user) to create sufficient demand for the product as an aerosol.

Charles Beach outlined some of the functions of the custom filler in developing and producing an aerosol product. "With the introduction of

(*Continued on Page 99*)

CSMA Convention December 8-10 To Mark Association's 45th Meeting

THE Chemical Specialties Manufacturers Association holds its forty-fifth annual meeting this year, its history dating back to the year 1914 when the original predecessor organization, the Insecticide Manufacturers Association was formed. The organization was formerly incorporated in New York in October, 1914, and the first meeting was held at the Hotel Astor in New York, December 8, 1914. Frank Hemingway was the first president of the organization, A. S. Hickerson was 1st vice-president and W. H. Rose 2nd vice-president. Harry Schnell of the *Oil, Paint* and *Drug Reporter*, was the first secretary of the association.

Initial membership was relatively small (by the second annual meeting 41 companies were listed as members). Members included manufacturers of household insecticides, agricultural insecticides and disinfectants. Before long the agricultural insecticide group dropped out of the association and formed their own organization.

This brief and necessarily incomplete historical sketch of C.S.M.A. is included for the benefit of the many aerosol members of the association whose acquaintance with and membership in the association does not antedate the past ten years.

In these early days, modern insecticides were unknown. Powdered preparation sold more widely than liquids. "Insect Powder," which consisted of powdered pyrethrum flowers, then of Dalmatian origin, was dispensed in small blowers. Pyrethrum-kerosene extracts, just beginning to appear on the market, were universally foul smelling and a hazard to drapes and upholstery because of their tendency to stain and discolor fabrics. This was before the days of "deo-base" and clarified pyrethrum extracts. Sodium fluoride was a big seller for roach control, and fly paper was the first line of defense against flying insects. On July 21, 1931 the name was officially changed to the "Insecticide and Disinfectant Manufacturers Association."

Much of the attention of the new I. & D. M. A. in the early years was concentrated on legislative matters and state and federal regulations. Through the late Twenties and early Thirties methods of testing insecticides and disinfectants were favorite convention topics. On disinfectant testing, the comparative merits of the Rideal-Walker vs. the Hygienic Laboratories method were discussed year after year, until finally the adoption of the F.D.A. method ended the annual debate. The development and

(*Continued on Page* 95)

PAST PRESIDENTS OF THE ASSOCIATION

FRANK HEMINGWAY	1914-1918
HARRY W. COLE	1918-1921
M. M. MARCUSE	1922
C. C. BAIRD	1923-1924
FRED A. HOYT	1925-1927
H. W. HAMILTON	1928-1929
DR. ROBERT C. WHITE	1930-1931
EVANS E. A. STONE	1932
PETER DOUGAN	1933-1934
CHAS. P. McCORMICK	1935
W. B. EDDY	1936-1937
J. L. BRENN	1938-1939
W. J. ZICK	1940-1941
J. N. CURLETT	1942-1943
H. A. NELSON	1944-1945
N. J. GOTHARD	1946-1947
G. M. BAIRD	1948-1949
L. J. OPPENHEIMER	1950-1951
C. L. WEIRICH	1951-1953
MELVIN FULD	1953-1955
E. G. KLARMANN	1956
H. E. PETERSON	1957
JAMES E. FERRIS	1958

Photographs from the Past . . .

Photo at the top of the following spread was taken at the annual banquet at the 17th annual convention of N.A.I.D.M. held Dec. 9th, 1930 in the Hotel McAlpin, New York. Among those seated at the speakers' table were John Powell, Chas. McCormick, Dr. McDonnell, Robt. C. White Sr., Harry Cole, Dr. Roark, Evans Stone, Charles Concannon, Peter Dougan and Campbell Baird. Others in the group included (l. to r.) Bill Hatfield, Wayne Dorland, Mike Lemmermeyer, Vic Williams, Nels Gothard, Ira MacNair, Bill Fisher, Dr. Peet, P. C. Magnus, Bill Zick, Dr. Dreyfus, Geo. McGlynn, Frank Rapp, Joe Magnus, Henry Nelson, Al Leith, Dudley Bachrach, Sam Bell, Oliver Jakob, Leonard Schwarcz, Larry La Cava, Jim Carpenter, Dick Quortrop, Ralph Gretsch, Jack Tillsley, Don Murphy, Jake Brenn, Doc Hamilton, George Tombak and Jack Miller.

The bottom photo was taken five years later at the 22nd annual convention held at the Waldorf-Astoria. Identifiable in the foreground are John Wright, Doc Hamilton, Amos Badertscher, Dr. Roark, Elliott O'dell, Fred Hogg, Frank Nelson, Dr. Reddish, Dr. Klarmann, Otis Poole, Bob Wotherspoon, Russ Boland, Stanley Barker, P. C. Magnus, Larry La Cava, Bob Kelly, John Powell, Dr. Trusler, Bill Eddy, Pete Reilly, Al Leith, Harold King, Bill Fisher, Russ Stoddard, Russell Young, George Warren, Ralph Stevenson, Grant Dorland, Dick Prentiss, Dick Quortrop and Wayne Dorland.

The photos from which these reproductions were made were loaned to *Aerosol Age* by J. B. Magnus of Magnus, Mabee & Reynard. M M & R have been active in the affairs of C.S.M.A. and predecessor organizations as associate members for many years.

The CSMA (then the N.A.I.D.M.) in 1930 . . .

(see preceding page for identification)

. . . and in 1935

Chairmen, Aerosol Division, **CSMA, 1948-1959**

1959 Chairman-elect E. J. McKernan, Seaquist Mfg. Corp.

1958 W. Earl Graham, Clayton Corp.

1956-7 Charles E. Beach, John C. Stalfort & Sons.

★ *And One To Grow On!*

A SALUTE TO THE AEROSOL DIVISION OF CSMA

on its 10th Anniversary

That extra birthday candle—the one to grow on—is especially appropriate as the Aerosol Division of the Chemical Specialties Manufacturers Association enters its eleventh lusty year. A year in which the aerosol industry will make further strides in a spectacular growth that has carried it from 5 million units in 1947 to well over 400 million in 1958.

On this tenth anniversary, General Chemical joins in saluting the Aerosol Division of CSMA . . . its chairmen, present and past . . . its many committees . . . and all its members—aerosol marketers, fillers and suppliers. All are working together to make America's great aerosol industry still greater—a one and one-half billion dollar business before the Division adds five more candles to its birthday cake.

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Allied Chemical

GENERAL CHEMICAL DIVISION
40 Rector Street, New York 6, N. Y.

1954-5 H. R. Shepherd, Aerosol Techniques, Inc.

1952-3 Dr. Edmond G. Young, E. I. du Pont de Nemours & Co., Inc.

1948-51 Harry E. Peterson, Peterson Filling and Packaging Co.

Aerosols in Great Britain

By A. Herzka, B.Sc., A.R.I.C.
Research Department,
The Metal Box Co., Ltd.,
Alperton, Midd., England

WITHIN recent months a number of interesting products have appeared on the British market. Osmond & Sons, Ltd., of Grimsby, Lincs, have introduced "Aerolac," an insecticidal lacquer packed into 12-ounce tinplate containers fitted with Precision valves. According to the manufacturers, "Aerolac" is designed to control all crawling insects for a period of nine months from the date of application and the formulation used is the result of many months of research into the production of colorless and odorless insecticidal films. The lacquer, which retains its insect killing properties after drying may be washed without loss of insecticidal efficiency and it is harmless to pets. "Aerolac" is said to destroy all insects which walk over it such as flies, cockroaches, ants, silver fish, etc. It is recommended that the spray be applied to areas where insects crawl and a band three inches wide is said to be adequate on windowsills, around boilers, fireplaces, skirtings, ovens and in ships' cabins, galleys and stores. This pack is recommended as ideal for use in dairies, shops and other premises where food is stored or handled and where the odor and drift of conventional insecticides would be unwelcome. An "Aerolac" dispenser costs 13/6d. (about $1.89 U. S.). In addition to this product Osmonds market a complete range of 16 aerosol products for home and farm which include "Aeropalm," a non-greasy handcream, "Antiseptane," a germicidal spray for humans or livestock, and "Ear Tick Remedy," which kills Spinose Ear Tick.

"Medic-aire," a new product designed to relieve nasal congestion and to kill airborne bacteria, is announced by Cooper, McDougall and Robertson Ltd., of Berkhamsted, Herts. Utilizing a six-ounce extruded aluminum container by London Aluminium (Containers) Ltd. and fitted with a Precision valve it is typical of the excellent presentation of this firm.

The product is a complex formulation of germ-killing and cold-relieving compounds which is understood to be particularly effective for children. Intensive work at the Cooper Research Center has produced this effective and simple method of relieving the symptoms of a common cold which also helps to prevent the infection from spreading. The manufacturers emphasize that "Medic-aire" is not an inhalant or nasal spray and should be used as a room spray. Medic-aire costs 7/6 ($1.05 U. S.). Cooper-McDougall and Robertson Ltd. are associated with Pressure Aerosols Filling Co. Ltd. (Also known as PAFCO Ltd.) Great Britain's leading contract filler. Although they have hitherto restricted themselves to halogenated hydrocarbon propellants, they will shortly be in a position to undertake filling.

"White Cloud" fire extinguisher is being marketed by Bradville Ltd. of London and is the first powder fire extinguisher to be marketed in a pressurized dispenser in the British Isles. A 20-ounce aluminum extrusion by Metal Box is used and Bradville's own one-shot valve is mounted in the standard one-inch cup. "White Cloud" is also the first fire extinguisher to be marketed in the U. K. which is fitted with a one-shot valve, the only sound way of marketing such packs. "White Cloud" retails at 29/6d. ($2.73) complete with wall bracket and there is also a special replacement service for used extinguishers, whereby replacements may be purchased at reduced prices.

Colgate-Palmolive Ltd. have recently commenced the marketing of nitrogen propelled toothpaste, which retails at 7/6d. ($1.05). Aluminum extrusions (by John Dale Ltd., of London) with a sloping shoulder similar to the contours of the United States toothpaste packs and Precision toothpaste valves are used. Aluminum extrusions with such shoulder contours are now available from every

(*Continued on Page* 104)

The Mechanics of

Packaging Pressurized Food Products*

By Robert C. Webster
Director, Customer Service Laboratory
Ohio Chemical & Surgical Equipment Co.
Division, Air Reduction Co.
Madison, Wisc.

THE packaging of pressurized foods is a relatively new field, yet the application of gaseous pressure to the dispensing of food products is old. The use of compressed gases for charging milk products dates back to 1882. Ashley in 1925 described a process for charging (and dispersing to a fluff) an ice cream mix under gaseous pressure. During the period of 1934 to 1936 Getz and Smith of the University of Illinois produced whipping cream with large amounts of overrun by aerating with nitrous oxide in small containers. Getz and Smith in 1942 and 1948 obtained patents for the process of aerating butter fat containing liquids with nitrous oxide and other gases.

These developments in pressure dispensing first found commercial expression in the packaging of pressurized whipped cream in refillable metal containers. These refillable metal containers are still widely used by the drug store and fountain trade. In the year 1948 the single trip metal container for whipped creams first appeared on the retail market. The single trip metal container for pressurized foods is an adaptation of the soldered-side-seam, low-metal-exposure, beer can.

In the year 1949 it is estimated that there were 30 million units of pressurized whipped cream sold on the U. S. market. This number has risen steadily to a volume of approximately 75 million in 1957. The lack of any meteoric rise in food aerosols, as compared to non-food aerosols can be attributed to a number of factors, among which are:

1. Lack of approval of propellants other than compressed propellants by the Food and Drug administration.
2. Reluctance of American consumer to accept foods in the aerated state, when the product has previously been marketed in the non-aerated state.
3. Lack of dispensing methods and techniques that would assure uniform removal of product by stream or spray dispensing.

Developments during the past several years have made it possible to overcome these stumbling blocks (and others as well) to a great degree. Today, the American consumer can buy spray barbecue sauces, salad dressings, chocolate syrups, cheese spreads, and many other products. The door to the convenience loaded pressurized food era is slowly being opened.

One of the areas that has received much discussion, yet little practical application, is that of the mechanics of pressurized food packaging. This paper is primarily directed toward the various types of processing lines that have been and are currently being employed for the packaging of pressurized foods.

I. The Ways and Means of Packaging Pressurized Foods

A. *Whipped Creams and Related Refrigerated Toppings*

The packaging of pressurized whipped cream is now a continuous automatic system. The mechanics of this type of packaging are shown in Figure 1. Essentially, the cream mix is filled into washed, drained cans. A fill of seven fluid ounces is normally employed. The foam-type valve is automatically fed into the one-inch crimp, and the valve is then clinched, crimped, swedged (or what have you) to the metal can. The filled, closed cans then pass to the gasser and shaker area. The compressed gas is than added through the valve from a manifolding system. The container is either agitated or non-agitated during the gassing cycle. Agitation is preferred as it serves the dual purpose of hastening equilibrium of the gas between the cream and head space and partially solidifying (or clumping) the product butter fat.

The closed, gassed container is then conveyed to an automatic capper that applies the overcap and passes the container to the packing table. The cased product is then refrigerated and shipped to the grocery or institutional outlet.

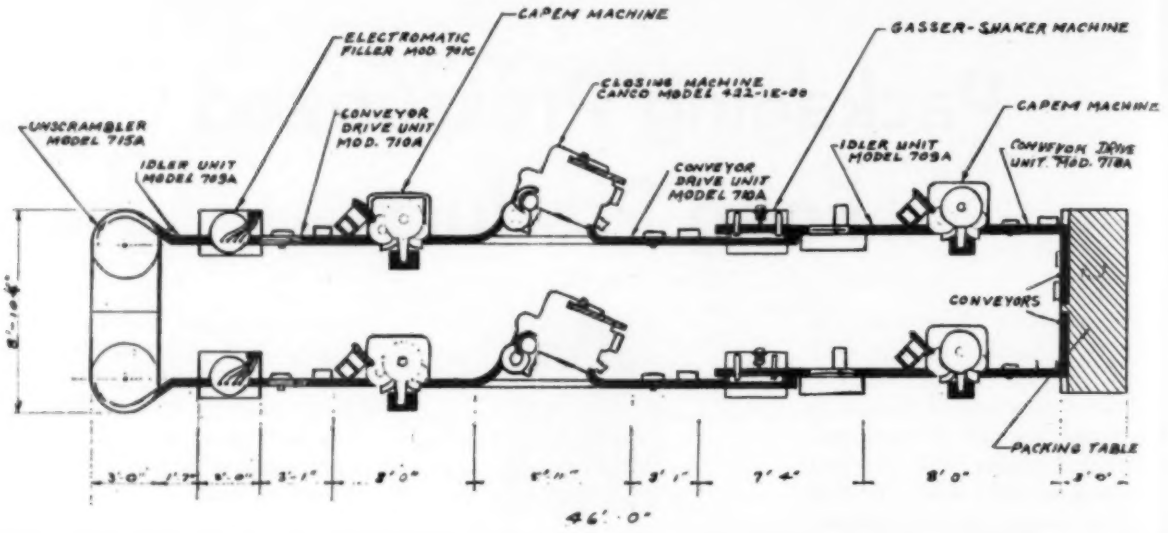
The packaging of pressurized whipped cream, as can be seen from

* Presented at the 11th annual conference of the Institute of Food Technologists (Southern California Section) on Oct. 17, 1958 at the Beverly Hilton Hotel, Beverly Hills, Calif.

Figure 1.

A Typical Pressurized Whipped Cream Packaging Line.

(*Courtesy: Mojonnier Associates*)



the above description, is a relatively straightforward process. The primary factors to be considered from the mechanical standpoint are relative to accurate quality control of factors such as:

1. Fill weight.
2. Pressure-temperature relationships versus equilibrium pressure.
3. Degree overrun.

There have been several recent innovations toward increasing the efficiency of pressurized whipped cream. There are currently available several medium high-speed rotary gasser and shakers rated at approximately 70-75 cans per minute. One leading manufacturer is reported to have a rotary high-speed line possessing aseptic packaging features.

The trend in the refrigerated topping field is toward achieving longer shelf-life of the product by "building in" aseptic packaging features. One leading manufacturer of pressurized whipped toppings is currently packaging under aseptic conditions with a marked increase in product quality and shelf-life duration.

II. Hot and Cold Fill Methods Other Than Refrigeration

The methods and resultant problems of packaging are akin, yet in many ways foreign to, those concepts applied to the packaging of whipped creams and related toppings. The methods applied to the pressurized packaging of barbecue sauces, chocolate syrups, or salad dressings are to a large degree still curiosities of a laboratory pilot line. Thus, due to the newness of this field, there is relatively little information available on the actual mechanics of such a packaging operation.

The packaging of a pressurized food, other than whipped cream, nonfood items utilizing compressed gases, or perhaps in the future products packed with certain liquefiable gases can be divided into three basic areas, which are:

1. Raw product preparation.
2. Filling, evacuation, and crimping.
3. Gassing with or without shaking.

The preparation of raw product for aerosol packaging is an area which has been discussed at length in several recent publications. Logically, the background of the manufacturer qualifies him far more for this phase of pressurized food packaging.

So long as the product is built or manufactured to the requirements of the aerosol package there should be no serious difficulties. These areas of development are:

1. Particle size.
2. Viscosity.
3. Color.
4. Flavor.

The basic structure of the aerosol valve is such that there are one or more minute orifices through which the product must pass. The basic particle size of the product must necessarily be several times smaller than the limiting orifice of the valve.

The product viscosity and other related factors must also be controlled to a point where the product will flow normally and unimpeded from the aerosol can. The product solids must also be controlled during manufacture to ensure adequate mixing and blending so as to minimize separation at a later date.

The factors mentioned above and those of required filling temperatures to insure adequate shelf-life storage are best decided by the manufacturer who is most familiar with his product and its characteristics during manufacture and subsequent storage.

Filling, Evaluation, and Crimping

Figure 2 is the prototype of the first non-refrigerated pressurized food packaging line. Many of the desirable features of a high-speed pre-

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surized food line have been incorporated and will be described in this paper. Some of the newer innovations and refinements of this line will also be discussed.

The filling of a pressurized food container is somewhat similar to the filling of the same or similar type of product into a conventional open top container. The main difference is that in the conventional open top container as small a headspace as practical is desirable. The goal is to reduce and maintain, depending upon the product, a headspace of approximately 3/16 of an inch. However, in the pressurized food container it is essential to maintain a headspace equivalent to 25-30% of the container volume. This is essential because of the nature of the propellant. In order to achieve proper and complete dispensing it is necessary to have a sufficient gas head and reservoir.

The filled can is then conveyed to the crimper area. During transit the valve must be placed into the container by hand, since the nature of the valve and its curved plastic tube at this date does not allow automatic valve feed.

The container with its loosely seated valve is then conveyed to the automatic crimper where the valve is swedged or crimped into the one-inch can opening. It is in the crimper, prior to the actual swedging, that mechanical vacuum and gas packaging can be applied.

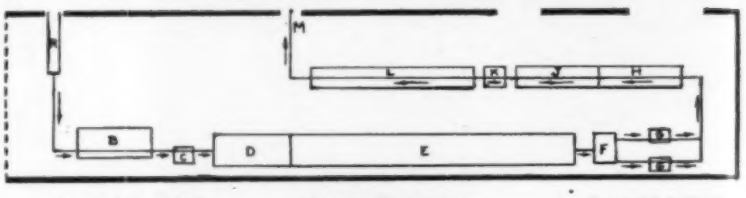
The use of mechanical vacuum and/or gas packaging cannot be over emphasized. The headspace variance between a pressure can and a conventional container is quite significant. This variance becomes even more significant in the case of a hot-filled product. The natural vacuum formed in an open top can with a 3/16" headspace filled at 195° F. and cooled to 70° F. will be approximately 18-20 inches. The same product hot-filled into a pressure can with a 25-30% headspace and cooled to 70° F. would have a natural vacuum of 8-10 inches.

The drawing of a mechanical vacuum will accomplish many purposes, several of which are:

Figure 2.

A Pressurized Food Line for Hot or Cold Fill 90 C.P.M.

(Courtesy: Western Filling Corp.)



A. CAN WASHER
B. 10-SPOUT PISTON FILLER
C. 1S HEAD VACUUM CRIMPER
D. 3/3 CAN ROLLER
E. 3/3 SPIN COOLER
F. UNSCRAMBLER
G. 12-HEAD GASSERS & SHAKERS
H. SPRAY TEST TABLE
J. LEAKAGE TEST TANK
K. LABELER
L. PACKING TABLE
M. TO WAREHOUSE

1. Relieving headspace oxygen, 20% of the gas contents of 3/16" headspace is considerably less than in a 25-30% headspace.
2. Relieving residual or entrapped oxygen by flashing. Under a vacuum a hot product boils, thus releasing vapors. By controlling the vacuum cycle or length of evacuation the degree of flashing can be controlled to a large degree.
3. Reducing the danger of aerobic bacterial growth.

The use of compressed gas headspace purging of food aerosol cans is also of importance (either in conjunction with or by itself) in reducing product and headspace oxygen and thus increasing shelf-life. The benefits of purging are similar to the benefits of vacuumizing or deaeration. Other advantages not possessed by vacuumization are:

1. Minimum removal of dissolved volatiles, such as flavor essences or aroma.
2. Protection of the product under an inert atmosphere.
3. Certain bacteria are inhibited by such compressed gases as carbon dioxide.

It has been shown in our laboratories that the proper level of vacuum in a pressurized container can and will result in increased shelf-life. This is of course no startling innovation, as vacuum has been a prime goal in conventional packaging for years. But the application and significance of high speed vacuumizing is especially significant in the field of pressurized packaging.

In order to achieve the line speeds necessary, it is essential to employ "multi-head" rotary crimpers. The can and loosely seated valve are moved into the first stage of the crimper where an air-tight seal is effected between the crimper head and the container. It is at this stage that the mechanical vacuum is drawn. The degree and effectiveness of the vacuumizing cycle are controlled by the length of this first stage.

The can then passes to a second stage cam where the valve is swedged or seated in the can opening by means of controlled spreading under pressure. The crimping operation can be compared to the first operation roll of a double seamer, except that it is accomplished by spreading teeth rather than by a seaming chuck.

The crimped can is then turned through 90° and rolled for a period sufficient to sterilize. This step is to achieve the hot-fill-hold method of sterilization employed so frequently in the canning of acid fruit products. The rolling of the hot canned product serves effectively to sterilize the internal headspace and valve components.

The partially sterilized can, assuming a hot-fill, is then passed into a spin-cooler. The importance of dropping product temperature *rapidly and to a uniform level* cannot be overstressed. This is true not only from the standpoint of reducing flavor and color loss due to heat, but to assure a uniform product temperature as it enters the gasser and shaker.

Due to the factor of solubility the temperature of the product during gassing has a pronounced effect on

the pressure and time requirements for achieving the desired equilibrium pressure. It has long been known that, as the temperature of the product increases, the solubility decreases. It has been shown that for the more soluble gases such as nitrous oxide or carbon dioxide, a 10° F. increase in temperature results in a pressure increase of 6.8 psig. Nitrogen, due to a much lower solubility, increases only 2.75 psig. for every 10° F. increase in temperature.

It can be readily seen from the above figures that to assure proper control of equilibrium pressure (the state at which pressure of the gas in the product equals pressure of the gas in the headspace) it is essential to control accurately the temperature of the product entering the gasser and shaker area. A product entering the gasser at 100° F. must be handled differently than a product entering at 75° F. For example, a chocolate syrup that has a desired equilibrium pressure of 90 psig at 70° F. would have to be gassed at 100 psig when at 100° F. to achieve a desired equilibrium pressure of 90 psig at 70° F. The above figure is assuming an adequate exposure time to the gas. To increase production speeds it is necessary to increase charging pressure. Thus, it can be seen that any variations in product temperature can result in marked variation in the equilibrium pressure of the finished container. The variation in temperature of product and its effect on equilibrium pressure becomes even more pronounced as the solubility of the charging gas decreases.

As can be seen in Figure 1 the use of multiple high speed gassers and shakers will greatly increase the efficiency and speed of the packaging line. The effect and degree of agitation during gassing are very important in assuring that the proper levels of equilibrium pressure are achieved.

There are many products, such as those that utilize nitrogen, that do not require agitation during gassing. Due to the low solubility characteristics of nitrogen the effect of agitation is slight, thus allowing a greater line speed, due to elimination of agitation. Currently, there is much experimentation being conducted to determine pressure-temperature-time relationships for charging soluble gases without agitation. Unfortunately, this will most probably necessitate charging at higher pressures. The effect of high pressures at room temperature or increased temperature in a closed container appears to be detrimental to the container side seam. There is apparently a slight displacement of the solder bond, which may be a weak point at a later date during storage. The use of high-charge-no-shake has been common in the whipped cream field for several years. An initial pressure of 140 psig in whipped cream can quickly drop to equilibrium pressure due to the refrigerated temperature of the product. Thus, the damaging exposure to high levels of pressure is of short duration. This is not true in room temperature products. The exposure time of high initial pressure could be many hours, as internal pressure slowly drops from 140 psig to 90 psig at 70° F., for example.

There is still a great deal of basic research work required in the gassing and shaking of a pressurized product. This generalization applies particularly to the areas of defining the multitude of container-product relationships in terms of time, pressure, and product temperature. The laboratories of Air Reduction and other major suppliers such as the can companies, are deeply enmeshed in explaining and defining these relationships.

One of the current "weak" areas of the pressurized food packaging line is at the gasser and shaker area. This is true not only from the standpoint of pressure control, but also from that of possible bacteriological recontamination. A product, in a hermetically sealed can, which received the proper fill temperature, is assumed to possess commercial sterility. Yet the charging operation allows the reentry of possible contaminants. A dirty charging valve or simply airborne bacteria on the outer valve surfaces allow possible recontamination, with the gas serving as the vehicle.

To attempt to solve this problem several courses of action have been taken. The ideal situation would be to sterilize the container and the gas at the same time. However, due to solubility effects and container handling difficulties, this is not currently considered as feasible, or practical. The other courses of action that are being attempted and in some cases utilized commercially are:

1. Microbiological filtering of the gas system prior to entry into the actual charging head. This filtering is done primarily as a safeguard against foreign material entering from the piping system. For all practical purposes, based on the finding of preliminary laboratory tests, compressed propellants utilized for food aerosol packaging are commercially sterile.
2. Use of ultra-violet light on the exterior surface of the charging head and on the outer valve stem.
3. Use of steam for flushing the exterior and interior surfaces of the gas manifold prior to the charging of each battery of containers.
4. The basic means of protection would be logically the maintenance of a high degree of sanitation and cleanliness in the area and at the physical point of charge.

After the charged container leaves the gasser and shaker area it then

(*Continued on Page* 103)

The author of this article, R. C. Webster, is widely experienced in the aerosol field. He was formerly manager of the Pressurized Food Division of Western Filling Corp., and prior to that was associated with Continental Can Co. and National Canners Association Laboratory.

Nitrosols in Glass Containers

By A. R. Marks
Wheaton Plastics Co
Mays Landing, N. J.

RESEARCH and testing have proven conclusively that compressed gases *can* be used as propellants for products in glass containers.

The glass container manufacturers' recommendation of a maximum pressure of 25 psig at 70°F. has absolutely no bearing on the strength of the glass container. This recommendation is applicable only to the use of the liquid propellants or the fluorinated hydrocarbons in relation to these containers. Unfortunately, this recommendation has been misinterpreted to imply a weakness in the glass container. The fact of the matter is that this recommendation was made to insure that marketers would produce a safe package (using a liquefied gas), and one which would reflect credit on the entire aerosol industry.

Glass, in spite of the very obvious fact that it is frangible, is fantastically strong when properly produced. Glass containers derive most of their pressure retention properties from the outer cohesive surface, and plastic coating protects this surface from the abuse and abrasion that it normally receives. The pressure retention characteristics of a container are thereby assured even under the most adverse conditions of handling. By maintaining and protecting the pristine glass surface, the frangibility of a container is substantially reduced.

An example of this is several four-ounce round plastic coated containers. Selected at random from the retail shelf these bottles had been handled during filling and transhipped several times. These containers consistently tested at 500 to 900 psi vividly demonstrating their excellent pressure retention characteristics.

Bottles of smaller capacity can reasonably be expected to withstand higher pressures and conversely bottles of larger capacity or eccentric shape would tend to stand less pressure. However, as size increases, it does not necessarily follow that there is a proportionate drop in pressure retention characteristics. All glass containers except the most eccentric shapes can be manufactured to safely handle pressures normally required where compressed gasses are used as the propellant.

IT HAS been a major fallacy in determining potential hazard to use pressure as the sole criterion. Granted that pressure alone can distort various containers rendering them unmarketable, pressure *per se* is not the major factor in a glass container, although it is important. Since the glass container has pressure retention characteristics far superior to most other containers used for pressure packaging, the factor to consider above all is the volume which will be occupied by the expanded propellant at atmospheric pressure and ambient temperatures.

The plastic coating applied to the bottles is of itself tough and resistant to tearing. Not only does it offer protection to the glass surface but it is also resistant to pressure. At ambient temperatures the tensile strength of the normal jacket will be 2000 psi with an elongation limit of 400 to 500 percent.

For comparative purposes, let us examine the chart below.

It can be seen from the chart that valid comparisons cannot be drawn between beverage packs and aerosols or nitrosols. A look at the expanded volumes of the medium and low pressure aerosols will reveal that the total potential volume can be greater than the 400 to 500% expansion of the plastic jacket. Vents are used in the plastic jacket to relieve the pressures developing before the elongation limit of the plastic is reached.

On the other hand, the potential expanded volume of the nitrosol is well below the elongation limit of the plastic jacket; therefore, the tendency toward cutting and tearing despite the apparent high pressure is considerably reduced. Expansion of the plastic jacket in relation to expanding gasses is an exclusive feature of the Wheaton package.

Testing indicates that container sizes up to 36-ounce capacity will perform satisfactorily as nitrosol packages. This, however, is not applicable to the use of liquefied pro-

(*Continued on Page* 103)

	Aerosol Medium Pressure 50% product and propellant Freon 12-11 (1:1)	Aerosol Low Pressure 50% product and propellant Freon 12-14 (1:9)
Capacity	140 ml	140 ml
Headspace	15%	15%
Pressure	35	20
Expanded Vol.	990%	770%

	Nitrosol (assuming no solubility of gas in product)	Beverage
Capacity	140 ml	390 ml
Headspace	15%	10%
Pressure	90	100
Expanded Vol.	200%	75%

Note: Although these figures are not thermodynamically precise, the values can be used for comparison.

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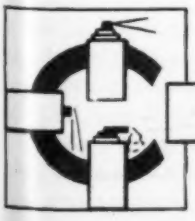

CONTINENTAL FILLING CORPORATION

Danville, Illinois

AEROSOLS in review

THE future potential of aluminum as a container material is the subject of an article in the November issue of *Food Engineering*. Cost, a principal consideration in future success of the material, is discussed in some detail:

"According to Alcoa, it's still too early to make a fair cost comparison. This firm reasons that 'cost is very strongly influenced by volume, and aluminum cans have never yet been produced in volume comparable to tin cans. This makes any comparison at the moment pure guesswork'.

"For the record, tinplate currently is around nine cents a pound. Compared to this aluminum sheet is about 37½ cents a pound, and pig aluminum is 26 cents. A pound of aluminum will give three times as many cans as will a pound of tinplate. However, the softer metal lacks the rigidity and strength of tinplate, so gage thicknesses have to be increased about 25 to 27%. Based on this, one maker of conventional cans estimates that aluminum sheet will have to drop to 25-26 cents per pound before it will be directly competitive.

"One container-industry source insists that even where conversion rates for aluminum rival those of tinplate, starting material costs for the lighter metal would keep it from being competitive. He says 1000 beer cans made from aluminum slugs would cost $11.30 more than the same number made from tinplate. Of this difference, $11.06 would be represented by starting material costs (24 cents by conversion)."

•

THE story of the development of the "Meti-Derm" aerosol product by Schering Corp. is the basis for an article in the October issue of *Drug & Cosmetic Industry*. Tracing the story of the product's development from first speculation about its potential to marketed product, the article quotes Schering researchers Dr. John Yakubik and Eric Marx:

" 'We tried various forms of the product and got five formulations. Then they were sent to clinical research for testing and study. Because the treatment of dermatitis conditions involves topical applications of preparations to inflamed, sensitive and tender skin, Dr. Hawkins wanted the aerosol to be as dry as possible, and we used isopropyl myristate as the vehicle. Each 150-gram can of the preparation contains 50 mg. of Meticorten. In addition, we noted that the spray-producing solvent, 'Freon,' would exert a cooling effect when applied.' "

Early in the research program it was discovered that the valve orifice was too large, and that the product was being used up in too short a time. After experimenting with various valves, Schering researchers settled on one with an orifice of .013 mm.

The article continues: "Now another problem appeared. When experimental studies of spraying particles were made, it was discovered that the average person, despite directions, covered a skin area wider and for a longer time than necessary. Specific directions, a three-second spray at a distance of from four to six inches, led to a coverage of an area of two by four inches. This would give the patient from four to five times the number of applications previously available from the tube."

•

MORE men on farms in Iowa use aerosol shave creams than in city-town homes, a survey by the *Des Moines Sunday Register*, Des Moines, Iowa, revealed recently. The same study revealed that use of women's hair sprays in cities and towns slightly exceeded use by women in farm areas.

Aerosol shave creams were used by some 37.2% of families on farms, as opposed to 34.4% in cities and towns. Hair sprays scored 45.8% on farms against 46.5% in cities.

Copies of the *Register* survey are available by writing to the newspaper at Des Moines 4, Iowa.

•

ACCORDING to the Nov. 17 issue of *American Druggist*, U. S. insecticide manufacturers (for the home market) report the following trends for 1959:

"Supplies will be plentiful.

"Some manufacturers say they will have to raise prices slightly because of increased material and packaging costs.

"The 12-ounce aerosol container will continue to be the best seller, with the 14-ounce size running a close second.

"Sales are expected to exceed the 1958 level.

"The trend toward specialized types of insecticides will continue strong."

•

JOHN H. BRISTON, chief aerosol chemist of Sparklets Ltd., who is writing a continuing series of aerosol articles for *Packaging*, British trade publication, devotes his October contribution to the important subject of long-term shelf testing. In it Mr. Briston points out that the minimum number of containers put on test is usually a compromise between the number of component variables and storage time to be covered, and the staff and storage space available.

"If a maximum time of eight months is set for storage then a ea-

sonable minimum number of samples would be ten containers per formulation. This allows storage at room temperature and 95°F. with destructive examination at periods of one, two, four, and eight months. A suggested arrangement is openings and examinations after

one month at room temperature
two months at 95°F.
four months at room temperature, and
eight months at 95°F. and room temperature.

"This accounts for five containers; but whenever possible it is safer to carry out duplicate examinations as a check on possible anomalous results. If this is impossible a certain amount of insurance is given by having one extra sample at each storage temperature. Such samples need not be touched unless anomalous results are encountered."

Mr. Briston outlines a method for checking for corrosion: "The container must be cooled below the boiling point of the propellant before opening and this is conveniently achieved by placing in an insulated box containing solid carbon dioxide. Examination of the can is best carried out with the aid of a low power microscope or a hand lens, and a note made of the condition of the various zones—headspace, interface, etc. This may often help in elucidating the cause of corrosion and it may then be possible to eliminate the trouble by changes in formulation or components.

"... If the container is perfectly clean after eight months at both temperatures, then there is obviously very little to worry about from the corrosion angle. Conversely, if the container becomes perforated during the storage period then the particular combination involved is discarded.

"Between these two extremes there are many other conditions where it should still be possible to assess the risk fairly accurately. The existence of pitting corrosion should always be viewed with suspicion, especially if it occurs fairly early during storage.

"In the case of aluminum, pitting is particularly dangerous as no anodic protection exists and the pitting often leads to perforation. In tinplate, the existence of detinning alone is no cause for alarm unless the particular product being packed is sensitive to dissolved tin or to contact with the underlying iron. Similarly a small amount of rusting can be tolerated provided that it is superficial and is unaccompanied by pitting of the iron underneath. The previous remarks on detinning of tinplate containers apply equally to generalized etching of aluminum containers."

The author advises that the simplest method of detecting leakage through the can's double seams or side seam is to apply a white paper label—which will show stains. He concludes the article with a brief discussion of possible propellant loss, valve malfunction, failure to spray, and chemical deterioration of syphon tubes, valve components, protective covers, and product.

•

INEZ ROBB, nationally syndicated columnist, pokes fun at the idea of pressurized cheese containers in her column that appeared in the *Chicago Daily News* on Sept. 29. She writes: "I have just returned, pale and shaken, from the supermarket where I was treated to a demonstration of an aerosol bomb filled with—I can scarcely bring myself to write it—Cheese!"

"Despite all the pre-cut, pre-ground, and pre-grated cheese on the market, I was not prepared for aerosoled cheese. It may be legal, but it's indecent."

•

THE September issue of "European Aerosol Survey," Druk-Pak's quarterly newsletter printed in Zurich, Switzerland, chides European aerosol shave cream marketers for pricing their products beyond the reach of the ordinary consumer. The periodical points out that European marketers are attempting to use a six-ounce aerosol container (retailing at over $1) to compete with a well-entrenched collapsible tube selling for 31 cents.

The periodical notes that the marketers are satisfied with a mark-up of about 50%, but that by the time the product reaches the consumer the "medieval marketing system" has driven the price up another 300%. Thus, the newsletter contends, a good product that costs about 30 cents to fill will, by the time it reaches the final retail market, cost the consumer over $1.

"These pricing practices remain as irrefutable obstacles to consumer marketing of aerosol products in Europe. We happen to know that Germany's leading shaving lather producer is thoroughly disappointed with its sales and would probably give up its aerosol product if its prestige were not so heavily involved. And this despite the fact they have an excellent product. But this company continues to market its six-ounce container for about $1, selling it competively with its own tube product costing 31 cents. We suggest that it might not be so much the lack of purchasing power that is holding up a major surge in European aerosol buying, as what appears to us to be an exorbitant and unjustified mark-up of sales prices. A retailer makes considerably more on a turnover of 500 units at 25% than he can on a turnover of 100 units at 40%—and more repeat customers will be brought in.☆

•

Stoneman Heads Wrisley

The Allen B. Wrisley Co., Chicago aerosol cologne marketer, has elected Alan C. Stoneman to be chairman of the board. He is former president of the Purex Corp., Ltd., of which Wrisley is a subsidiary.

At the same time the company announced the election of Eugene F. Bertrand, former sales manager of the Drug and Chemical Divisions of Owens-Illinois Glass Co., as president and sales director of Wrisley.

•

Bottner to Knomark Post

Irving J. Bottner has been appointed president of Knomark Co., Brooklyn, N. Y., manufacturers of "Esquire" aerosol and conventional shoe polishes. Since 1956 he was vice-president and treasurer of Revlon, Inc., Knomark's parent company.

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Toxaphene provides excellent control of flies, mosquitoes, gnats, ants, silverfish, bedbugs, roaches, house spiders, black carpet beetles, clothes moths, fleas, many small flying insects, and other pests which invade homes and business establishments.

To learn how toxaphene can lower your costs and improve your formulations, contact your nearest Hercules sales office.

SOME ADVANTAGES OF TOXAPHENE

- ***Long residual biological activity***
- ***Needs no auxiliary aromatic solvent***
- ***Compatible with common toxicants or knockdown agents***
- ***Pleasant piney odor***
- ***Does not discolor treated surfaces***
- ***Economical to formulate***
- ***Relatively low toxicity to warm-blooded animals at concentrations used***

Agricultural Chemicals Division

HERCULES POWDER COMPANY

INCORPORATED

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NX58-6

NEWS of Pressure Packaging

Wolfson Forms Contract Filler

Pace, Inc., a new contract and private label packager for the aerosol industry, has been organized in Wilmington by Ira A. Wolfson. Located at 901 Washington Street, Wilmington 1, the company will have a pressure-fill line in operation on December 1.

According to Mr. Wolfson, this line, with its associated product development laboratory and formulation facilities will make available to aerosol merchandisers the latest techniques in aerosol packaging.

Mr. Wolfson, who was formerly with the "Freon" Products Division of DuPont, will assume the office of president. Associated with him will be a chemist, machine designer, chemical engineer, and a label designer.

•

Colton Names UK Agents

Films & Equipments Ltd., 138 Wardour Street, London W.1, England, has been appointed agents in the United Kingdom for the Colton-Alpha line of aerosol filling equipment. The equipment is being manufactured by the Arthur Colton Co. Division of Snyder Tool & Engineering Co., Detroit.

Included in the Colton-Alpha line is a new series of rotary pressure fillers for rated outputs of up to 200 containers per minute, as well as butane-propane fillers. Each is adjustable to fill containers from three to 16 ounces in capacity.

•

Aerosols in Kenya

An aerosol filling operation has been organized in East Africa to close that area's export-import gap. Called E. A. Aerosols, the firm was organized at Nakuru, Kenya by Mr. and Mrs. G. M. Roberts. It will fill six and 12-ounce cans of "It," an insecticide utilizing dewaxed pyrethrum as the active ingredient, and market them at prices below those of imported products.

The containers and valves are being manufactured by the Metal Box Co. of East Africa, and the propellant is being imported from Germany. Industrial alcohol and dry ice are obtained from Uganda and Kenya.

The plant has a maximum capacity of 500,000 containers and plans are going ahead to increase this capacity. So far as can be ascertained, this is the first aerosol filling operation in Africa outside of the Union of South Africa.

•

Mennen Takes Over Advertising

William G. Mennen Jr., executive vice-president of the Mennen Co., Morristown, N. J., has taken over the post of advertising manager of the company. He will be assisted by Michael Jackson.

Leonard Colson, former advertising manager, left the company in September to join the staff of Warwick & Lengler, one of the advertising agencies handling the Mennen account.

•

Forms Aerosol Marketing Division

Adrian-Daniels, Inc., New York advertising agency, has established an Aerosol Marketing Division to service aerosol manufacturers and marketers in product research, manufacture, marketing, package design, advertising, public relations, etc. The division will be headed by Etta W. Berger.

Lee Callans Dies at 47

Lee D. Callans, 47, a sales manager for General Chemical Division, Allied Chemical Corp., New York, died of cancer at Washington Hospital Center, at Washington, D.C. on November 23. He is survived by a son, Dans, 15 and his mother, Mrs. James D. Callans of Hopewell, Va.

A member of the Allied Chemical organization since 1950, Mr. Callans had headed sales of the company's "Genetron" propellants to the aerosol industry and refrigerants to the original equipment market since 1954. Previously he had served as an executive assistant and as a sales and technical specialist in the offices of the vice president and director of operations.

Mr. Callans was a graduate of College of William & Mary from which he held a bachelors degree in chemistry.

Earlier in his business career, he had been chief chemist and plant superintendent of Holden Vale Manufacturing Co., Lancashire, England; production and research manager of Hercules Powder Co., Hopewell, Va., and a sales engineer, new product sales coordinator and assistant sales manager of Antara Products, General Aniline & Film Corp., New York.

John Lee Appointed Sales Manager By Kerr

Kerr Chemicals, Inc., Park Ridge, Ill., aerosol paint and chemical manufacturer, and Minit Spray Corp., a Kerr affiliate, have announced the appointment of John W. Lee as general sales manager of the combined companies. A veteran in sales management in the packaged goods merchandising field, Mr. Lee was formerly field sales manager of the Bostwick Laboratories Division of the Connecticut Chemical Research Corp., also a pioneer in the aerosol packaging field. Prior to his service with Bostwick, he was regional sales manager of the Housewares Division of Sherwin-Williams Co.

Kerr Chemicals, Inc., with two plants in the Midwest and one on the West Coast will continue in the manufacture and supply of aerosol products to houseware, drug, hardware and automotive outlets as well as in the manufacture of bulk chemicals for industry. Minit Spray products, aerosol enamels and lacquers together with a new line of boating and camping accessories such as a marine horn, "Minit Stove," "Perk-A-Pot" and the "Gasser Fuel Tank" are sold through marine, sporting goods, automotive, electronic, hardware and other outlets.

Mr. Lee will direct the sales and promotional activities of both Kerr Chemical and Minit Spray, although each company will retain its own separate sales organization, each one reaching certain specific markets.

See us at the 45th Annual CSMA Convention, Hotel Commodore Room 123

LEADING PRODUCTS OF THE WORLD HAVE BEEN DISPENSED FROM THEIR AEROSOL CANS THROUGH OVER 250,000,000 FEET OF AEROFLEX "P" DIP TUBES!

AEROFLEX "P"® DIP TUBES!

First Grade virgin materials are used exclusively in the manufacture of Aeroflex "P" dip tubing. The very finest raw materials are compounded into this special crack-resistant formulation. Then Anchor inspects and controls the quality of each reel during production. Shipments are guaranteed to be of uniform size, odorless, non-toxic and are laboratory tested for crack resistance. Write Today for booklet "Extruded Plastics".

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American Can Announces Lower Pricing Method

THE American Can Co., in an unprecedented action, last month announced "basic and far-reaching" changes in its metal can pricing policies, which it said will be reflected in lower can prices for most of its customers.

"These changes, with substantial economies we have achieved through our coil processing program, will mean an aggregate saving to our can-using customers of over $9 million," William C. Stolk, president, told a special press conference in New York. The coil program, in which the company has invested $32 million, he added, "already has amply justified our faith in the economies we believed it could produce."

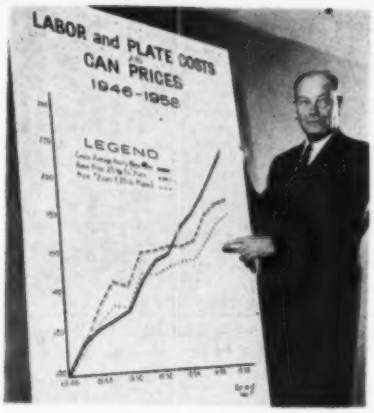
Major changes in what he described as "long-standing pricing practices" will be the elimination of the method of averaging can prices over broad geographic areas and, instead, "the establishment of a separate f.o.b. price at each of our plants for each type and style of can."

He said the company will "hold the line" on the price reductions until Oct. 1, 1959, "except for adjustments that may be necessary to reflect any increases the steel companies might make in their tin plate prices."

Mr. Stolk said the changes in Canco's can pricing policies resulted when a "searching re-examination" of Canco operations showed that "some existing pricing practices, which have grown up over the years in the metal container industry, have clearly outlived their usefulness. To us, they appear archaic and unrealistic, and we are consigning them to the junk heap."

The action reducing can prices, Mr. Stolk said, "is all the more startling because it comes at a time when our costs still are rising. This will mark the first time, in my recollection, that any can prices have been cut voluntarily by a can company as the direct result of economies it has been able to achieve."

"We believe that under present inflationary conditions any voluntary reduction in the price level of a product as widely used as metal cans is a contribution to the economy as a whole." He pointed out that government leaders "have made it abundantly clear that management, labor and government itself share the responsibility for halting inflation." American Can, he added, "endorses these views 100 per cent."



Canco president William C. Stolk explaining the new price policy.

He pointed out that the elimination of the "broad area pricing" will mean the Canco can prices "now will reflect to customers the freight-cost advantages of their nearness to the steel mills."

The changes in pricing policies, Mr. Stolk said, follow a "similar step" taken by the company on September 25 when it announced a new method of specific pricing of cans "in closer relation to the labor and materials costs in their manufacture."

He explained that since 1946 the cost of quarter-pound electrolytic tin plate, the type most commonly used for cans, has been raised eleven times, increasing its cost 109%.

In the same period, the average hourly wage paid by Canco has gone up from $1.08 in 1946 to $2.63½ today and employe benefits have increased 46 cents per hour, he said. These figures represent an increase of more than 166% in this cost alone, he pointed out, and added that, since World War II, the price of a standard tin can has increased only 93.5%.

Chemo Puro Names Hogan

John F. Hogan has been appointed manager of market development by Chemo Puro Manufacturing Corp., Newark, N.J. He will be in charge of promoting new uses for the company's fungicides and preservatives, sold under the "Chemocide" trade mark.

Mr. Hogan is a former research fellow at the Mellon Institute, and was subsequently associated with Pennsylvania Industrial Chemical Corp. and Refined Products Co.

•

Florasynth Execs. Visit Europe

Julien Bellot, director of research of the Perfume Division of Florasynth Laboratories, Inc., New York, has returned from a three-month visit to Europe, where he visited business associates and conferred with the heads of the foreign affiliates of Florasynth in Europe.

In Grasse, France, Mr. Bellot and Joseph H. Fein, treasurer of Florasynth, examined the new developments of Schmoller & Bompard, producers of flower absolutes, who for many years have been represented exclusively in the United States and Canada by Florasynth.

•

Carbide Appoints Hartley

Thomas M. Hartley has been appointed sales manager for "Ucon" Refrigerants by Union Carbide Chemicals Co., Division of Union Carbide Corp., New York. He will make his headquarters in New York City.

The appointment is another step in the company's organization for marketing "Ucon" fluorocarbons, which will be produced at Institute, West Virginia, in a new unit designed to turn out 50 million pounds per year. It is slated to go on stream this fall.

•

J. A. McDonald To Shulton

John A. McDonald, former vice president and general sales manager of the Bon Ami Co., has joined the Fine Chemical Division of Shulton Inc., Clifton, N. J., in the post of sales manager for consumer products. He takes over marketing responsibility for the Bridgeport Aer-a-sol line.

DOES IT PLEASE THE *Lady?*

As a matter of fact, it *must* please the lady if an aerosol is to sell successfully. The very nature of a pressure-packed product makes its odor the *most* important factor in sales appeal and product acceptability.

VAH can help you to please the lady . . .

IN MATTERS OF CREATIVE FRAGRANCE

The VAH perfumers will create for you a distinctive fragrance that is not only a thing of true beauty in itself, but one that is ideally suited to the product, and to the market you intend to influence. You *know* it will be technically right and within the price range you determine. None is better able to serve your fragrance needs than VAH.

IN MATTERS OF AEROSOL TECHNIQUES

The VAH Aerosol Laboratory, excelling in facilities, ability and experience will be happy to guide you in the complete development of your aerosol product. VAH customers enjoy all these services:

- Product Development
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- Test Packaging
- Valve and Package Recommendations
- Filling Procedures
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New Aerosol Loader Organized in Bridgeport

A NEW company that will act as a specialty packager and filler of aerosol products has been formed in Bridgeport, Conn. Called Aero-Chem Laboratories, Inc., the new filling organization is located at 1935 State Street Extension, Bridgeport 5.

C. O. Rader

Andrew Zelle

The company's activities will include contract packaging of specialized aerosol products, particularly those requiring metered dispensers. Facilities include a production line geared to handle 20,000 units in bottles and cans per work shift. Another line for small metered dispensers can accommodate an additional 15,000 containers per shift. After January 1st, a pressure filling line with a capacity of up to 15,000 units per shift will be in operation to handle water-base products in either liquefied gas or nitrogen propellants.

Aero-Chem is headed by Charles O. Rader, former vice-president of PowrPak-ConnChem, Inc. Andrew Zelle is executive vice-president and general manager in charge of engineering design and product development, and John Sullivan has been named treasurer and assistant to the president.

John Sullivan

All three were formerly with Connecticut Chemical Research Corp. Mr. Rader was sales manager of the contract packaging division and became vice-president in charge of contract packaging sales when the firm merged with PowrPak to form PowrPak-ConnChem. Mr. Zelle was director of packaging research for ConnChem and later joined the Valve Corp. of America as consultant and member of the engineering staff. Mr. Sullivan was quality control and process technician at ConnChem.

Mr. Rader has been in the aerosol field since 1948. He was general sales manager and advertising manager for the aerosol division of Bridgeport Brass Co. and later sales manager for Bostwick Laboratories.

A member of the Chemical Specialties Manufacturers Association, Mr. Zelle has designed a number of specialized aerosol components. He recently devised a fully automatic line, including filling and sealing machines, for the manufacture of metered perfume dispensers.

According to Mr. Rader, Aero-Chem is also studying the possibilities of adding production involving nylon aerosol containers. A special laboratory will handle research on pharmaceuticals and drugs designed for aerosol as well as on cosmetics and household products. The firm plans to design and develop new package designs for products not presently marketed in aerosol.

•

Safca Splits Interests

Safca Aerosol Manufacturing Ltd., Bracknell, Berks, England, last month announced a separation of the company's valve manufacturing and custom filling activities into two separate companies. The two are Safca Aerosol Valve Co., Ltd., which will design, manufacture, and sell all types of aerosol valves, and Aerosol Packaging Co. Ltd. which will carry on contract aerosol filling, and will take over the business of Safca Aerosol Manufacturing Ltd.

Both companies will be controlled by Associated Aerosol Industries Ltd., a holding company which is itself a controlled company of Thomas Tilling Ltd. and Commercial Plastics Ltd. Chairman of the board of Aerosol Industries Ltd. is G. G. Thompson, managing director is J. Pomeraniec, and K. H. Chapman is another director. R. D. Wood is secretary of the parent company.

Both Safca Aerosol Valve Co. and Aerosol Packaging Co. will maintain sales offices at 75 Grosvenor Street, London W.1.

•

Carroll Clark Heads MGK

Carroll A. Clark has been elected president of McLaughlin Gormley King Co., Minneapolis producers of insecticides and insect repellents, to succeed George A. McLaughlin who was elevated to the position of board chairman. Mr. McLaughlin will continue to serve as chief executive officer and treasurer of the 56-year-old firm.

Mr. Clark, who joined the company in 1932 and has been vice-president and general manager since 1947, will assume active management of all phases of the company's operations. He will continue as president of the wholly-owned subsidiary, McLaughlin Farm Chemicals, Inc., a position he has held since 1953.

The new executive changes were announced at a meeting of the board of directors on Nov. 18. At the meeting it was also announced that company sales and profits for the year ending Sept. 30 were "up substantially" over those of 1957, and exceeded figures for recent years.

•

Anchor Plastics Names Gans

Leo Gans has been appointed to the position of assistant general manager of Anchor Plastics Co., Long Island City, N. Y. The new appointment is the result of a recent expansion of production facilities for custom extrusions, and the acquisition of additional space to keep up with increased demand for extruded and fabricated extruded parts.

•

Copia Joins Newman-Green

Newman-Green, Inc., Addison Ill., aerosol valve manufacturer, has announced the appointment of Sam F. Copia to its sales staff. He will be located at the company's Addison plant and will assist in the coverage of the Midwest sales area, as well as being in charge of the internal sales functions of the company. Mr. Copia left Dupli-Color, where he had been employed since 1953. He was appointed purchasing agent for Dupli-Color in 1955 and was instrumental in getting an aerosol paint program established in that company. Previous to that, Mr. Copia served two years in the United States Army including 14 months of Korean 45th Infantry Division action.

Herzka Visits U. S.

A. Herzka, a member of the Research Department of the Metal Box Co., Ltd., London, England, and columnist for *Aerosol Age*, arrived in New York in mid November for a business visit to the U. S. He will visit a number of aerosol plants in the East, Midwest, and possibly the Far West to observe U. S. filling methods.

Mr. Herzka will also attend the December meeting of the Chemical Specialties Manufacturers Association.

•

Lanvin Joins Aerosol Move

Lanvin Perfums, New York, a major marketer of perfumes and colognes and one of the largest perfume advertisers in the country, began distribution Nov. 1 of its new three-ounce aerosol container. Retailing at $5 in a package of anodized aluminum in gold and black designed by the jeweler Cartier, the product is reported to be the result of three years of study with container coatings and propellants that would not alter the perfume contents of the package.

It will be available in "My Sin," "Scandal," "Rumeur," and "Pretexte." Edouard L. Cournand, Lanvin president, reported that the company's leading perfume "Arpege" will not be available in aerosol form for at least another six months, during which the product will be put through extensive shelf testing.

•

Beckman Names E. P. Tagge

Beckman Instruments, Inc., Fullerton, Calif., has appointed Edward P. Tagge to the post of general auditor, and Robert A. Lineberger as controller of the company's Scientific and Process Instruments Divisions. The company makes gas chromatographs and other instruments for the aerosol industry.

•

Dr. Weed Joins Fairfield

Dr. Alfred Weed who until recently has been in charge of household insecticide sales for the insecticide products department of Olin-Mathieson Chemical Corp., Baltimore, has just joined Fairfield Chemicals, Food Machinery & Chemical Corp., New York. He will act as consultant and special assistant to John Rodda, manager of Fairfield operations.

Dr. Weed's experience in the insecticide industry has spanned over thirty-five years. He was originally technical director of John Powell & Co., and was one of a group of Powell employees who acquired the business when it was sold by Mr. Powell seven or eight years ago, and who later disposed of their interest in the company to Olin-Mathieson. Dr. Weed presently makes his home in Asheville, N. C. He will continue to headquarter there, but will travel as needed in the interest of Fairfield, specializing in sale and servicing of some of the "Powco" specialties which he has handled for Olin-Mathieson.

Dr. Weed has long been active in the Chemical Specialties Manufacturers Association and has served prominently on committees of the association as well as on the board of governors.

•

Owens-Illinois Names O'Rourke

Emmett P. O'Rourke has been named manager of the Chicago sales branch of the Glass Container Division of Owens-Illinois Glass Co.

Givaudan Holds Reception for Industry Leaders

A group at the Givaudan November reception for members of the cosmetic industry includes Bud Keely of *Beauty Fashion*; Dr. Everett McDonough of Evans Chemetics; Andrew A. Lynn, Chesebrough-Ponds; Givaudan's L. L. Lowden; Dr. S. Karas; E. R. Durrer, Givaudan president, and J. A. Straka of Chesebrough-Ponds.

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Roto-Index and Laboratory Units

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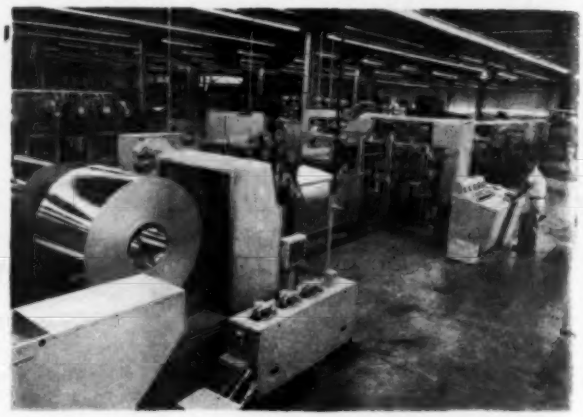
Canco Completes Eighth Tin Plate Processing Plant



View of one of the tinplate processing lines. Coil feeds into line from left.

A $32-million capital expansion program by American Can Co. to provide the can industry's first major facilities for processing tin plate from coils was completed last month with the formal opening of the company's new Hillside, N. J., coil plant.

Hillside is the eighth in a nationwide series of coil processing centers that Canco has put into operation in the last 18 months. The plants, which will perform inspection, shearing and other operations previously carried out by the steel mills, will supply an estimated 85% of the company's U. S. plants' needs.

More than 250 state and local government officials and industry leaders from the New York - New Jersey area, led by Governor Robert B. Meyner of New Jersey, joined Canco executives at the dedication ceremonies. Governor Meyner helped cut an electrified tin plate ribbon automatically setting in motion the plant's battery of high speed plate-shearing lines.

He hailed American Can's "significant role" in the continuing industrial development of New Jersey.

Other Canco coil processing centers, opened during the past 18 months, are located at Tampa, Florida; Houston, Texas; St. Louis, Missouri; Hammond, Indiana; Milwaukee, Wisconsin; and Los Angeles and Oakland, California.

The Hillside facility, with a capacity for processing 400 million pounds of plate annually, will supply American Can container plants at Hillside, Hoboken, Jersey City and Brooklyn, and Needham, Mass.

Air Reduction Completes Lab

Completion of an extensive addition to the Air Reduction Co., research and development laboratories at Murray Hill, New Jersey, was marked on Oct. 29, when the board of directors of the company held a meeting at the enlarged facilities. Following the meeting, a conducted tour of the installation was made.

The new addition, a two-story polymer laboratory costing over a half-million dollars to construct, was built to house additional chemical research facilities for the various divisions of Air Reduction. In the new laboratory, particular emphasis will be placed on the development of polymers primarily for paints, adhesives, plastics, coatings, films, paper and textile treating agents.

Cryogenic research activities at the new laboratory include development and testing of equipment for handling liquefied gases, development of processes for the more efficient separation of gases by liquefaction techniques and the conduct of experiments to secure design data for low-temperature equipment and processes.

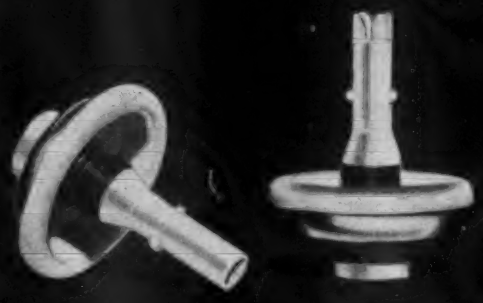
•

Johnson Appoints Croft

S. C. Johnson & Sons, Ltd., Brantford, Ontario, Canadian subsidiary of the U. S. firm, has announced the election of Frank D. Croft as president and managing director. He joined the company in 1920.

another first from the pioneer of foam valves

AERATED CONTAINER CORPORATION ADDS A NEW, LOW COST, NON-METALLIC TILT VALVE FOR FOOD AND NON-FOOD PRODUCTS



Unique features make Aerated's newest tilt valve the most profitable to specify and buy.

- Spring-diaphragm incorporating a limit lock (patent pending) guarantees uniform preloading and quick acting shut off.
- Specially designed valve seat assures leak proof seal and provides an easily controlled flow for accurate upside down dispensing directly where required.
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Company_____ Phone_____

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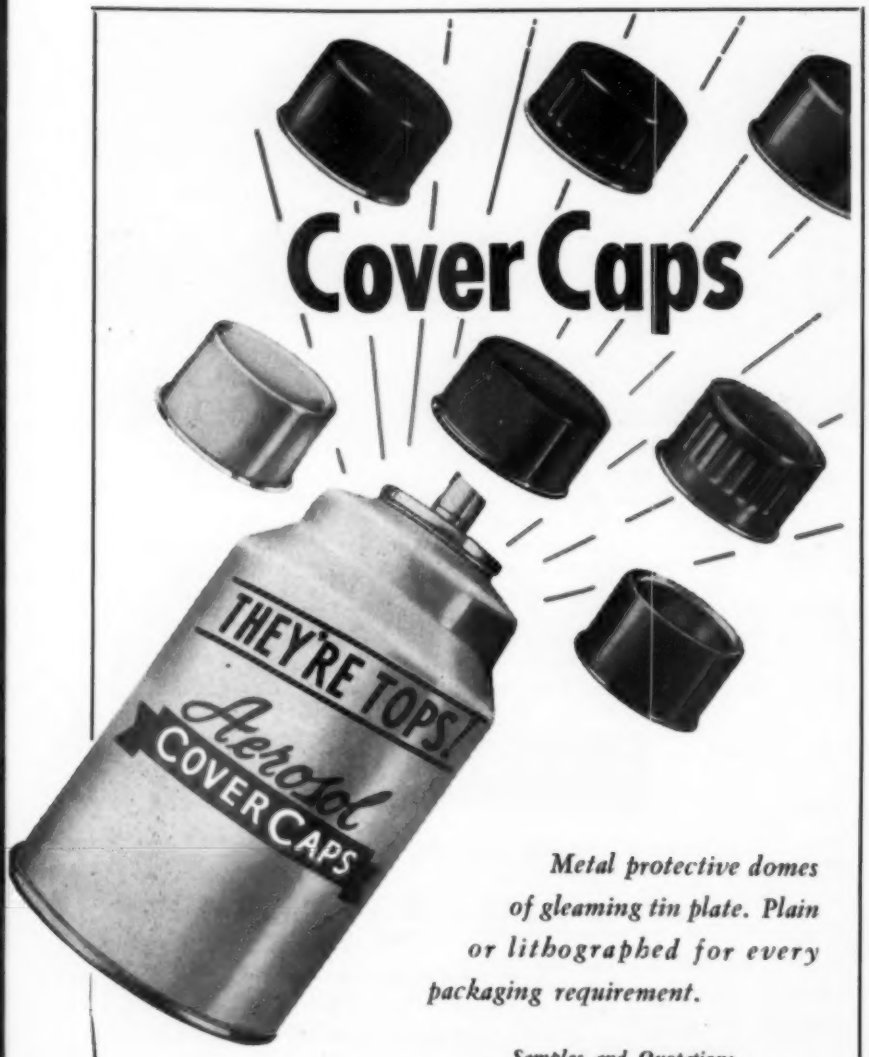
Fragrance Foundation Meets

The Fragrance Foundation held its ninth annual convention at New York's Waldorf-Astoria Hotel on Oct. 21. H. Gregory Thomas of Chanel was elected president ,and Bernard d'Escayrac of Guerlain, Pierre Harang of Houbigant, and Frazer V. Sinclair of *Beauty Fashion*, were elected vice-presidents. A. L. van Ameringen of van Ameringen-Haebler was elected secretary and Joseph A. Danilek of Mary Chess, treasurer.

The feature of the meeting's program was a panel discussion on "Point of Sale — The Last Hurdle." Ludwig J. Amtmann, vice-president and general merchandise manager of Woodward and Lothrop, Washington, D. C., spoke on the subject from a retailer's viewpoint; and Herbert Storfer, executive vice-president, Parfums Corday, Inc., spoke on the manufacturer's view. Publicity was discussed by Charles Granville, president of Angelique, and Ruth Muggleбee, woman's editor of the *Boston Record and American.*



Metal protective domes of gleaming tin plate. Plain or lithographed for every packaging requirement.

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"A Quarter Century of Specialized Metal Closure Manufacture"

Union Carbide Shifts Execs.

The Union Carbide Corp., New York, has announced the election of Morse G. Dial, president, to the newly-created office of chairman of the board and chief executive officer. He was succeeded as president by Howard S. Bunn, executive vice-president. Kenneth H. Hannan continues as executive vice-president and Birny Mason, Jr., vice-president, became executive vice-president. Mr. Mason and Kenneth Rush, vice-president, have been added to the board of directors.

Mr. Dial has been president of Union Carbide since 1952. He joined Union Carbide in 1929 and became vice-president in 1949 and president in 1952. Mr. Bunn joined the company in 1922 and was elected executive vice-president in 1955.

Mr. Hannan joined the law department of Union Carbide in 1936, was elected a vice-president in 1954, and an executive vice-president in 1956. Mr. Mason joined the company in 1932, and held various positions in research, production, and industrial relations before becoming president of Union Carbide Development Co. in 1956. Mr. Rush has been a vice-president since 1949.

•

Factor Denies FTC Charges

Denying Federal Trade Commission charges of false advertising, Max Factor & Co., Hollywood, Calif., declared that its "Natural Wave" spray *will* "change naturally straight hair to naturally curly hair."

A Commission complaint, issued Oct. 15, had charged the firm with making false claims in television and other advertising.

For example, the complaint cited a TV commercial which showed a model first with straight hair and then curly hair while the announcement said, "change the structure." "from naturally straight," "to curly." which phrases were also superimposed on the screen. These claims, the complaint charged, are false.

The answer maintains that the product *will* change hair structure to make naturally straight hair naturally curly.

CSMA Announces Award Winners

A PRESSURIZED food product, entered in a separate category for the first time this year, walked off with the "Grand Award" as the most attractively designed aerosol package in the 1958 Aerosol Packaging Contest. The results of the contest, sponsored by the Aerosol Division of the Chemical Specialties Manufacturers Association, were announced by the association at its 45th annual meeting at the Hotel Commodore, New York, on Dec. 9.

Big winner for 1958 was "Sizzl-Spray" barbecue sauce, which is marketed by Andersen Foods, a Division of Heublein, Inc., Menlo Park, Calif. The product took first place honors in the Food Products classification as well as the "Grand Award" for the best all-round package. Other winners were:

1. *Insecticides, Repellents and Moth Proofers*: "Insect Killer," Electrolux Corp., New York.
2. *Room Deodorants*: "Klean Air," Avon Products, New York.
3. *Medicinal and Pharmaceutical Products*: "Fungi-Rex Athlete's Foot Spray," Rexall Drug Co., Los Angeles.
4. *Perfumes, Colognes and Toilet Waters*: "Chanel No. 5 Spray Cologne," Chanel, Inc., New York.
5. *Hair Preparations*: "Brite Set Hair Spray," Cara Nome, Los Angeles.
6. *Protective Coatings*: "Quik Spray," Sheffield Bronze Paint Corp., Cleveland.
7. *Industrial Products*: "D. C. S. Cutting Oil," A. W. Chesterton Co., Everett, Mass.
8. *Shave Products*: "Gillette Foamy Shaving Cream," Gillette Safety Razor Co., Boston.
9. *Other Household Products*: "Sprayrite Animal Repellent," Virginia Smelting Co., W. Norfolk, Va.
10. *Other Personal Products*: "Nail Dri," A-M-R Chemical Co., Brooklyn, N. Y.

Judges for the 1958 contest, with the product which won the "Grand Award," are (seated) Mrs. D. Culmore Lincoln, Stony Brook, L. I., housewife; Miss Dorothy Cassidy, managing editor, *Bride & Home* magazine, holding "Sizzl-Spray" barbecue sauce, the winner of the "Grand Award"; Miss Tedi Thurman, National Broadcasting Company's "Miss Monitor." Standing are Charles Alvey, Donald Deskey Associates, New York; Preston James Beil, publisher, *Variety Store Merchandiser* magazine; Francis E. Blod, president, Design Associates, Ltd., New York, and Irving Feldman, president, Zelart Drug Co., Westbury, L. I.

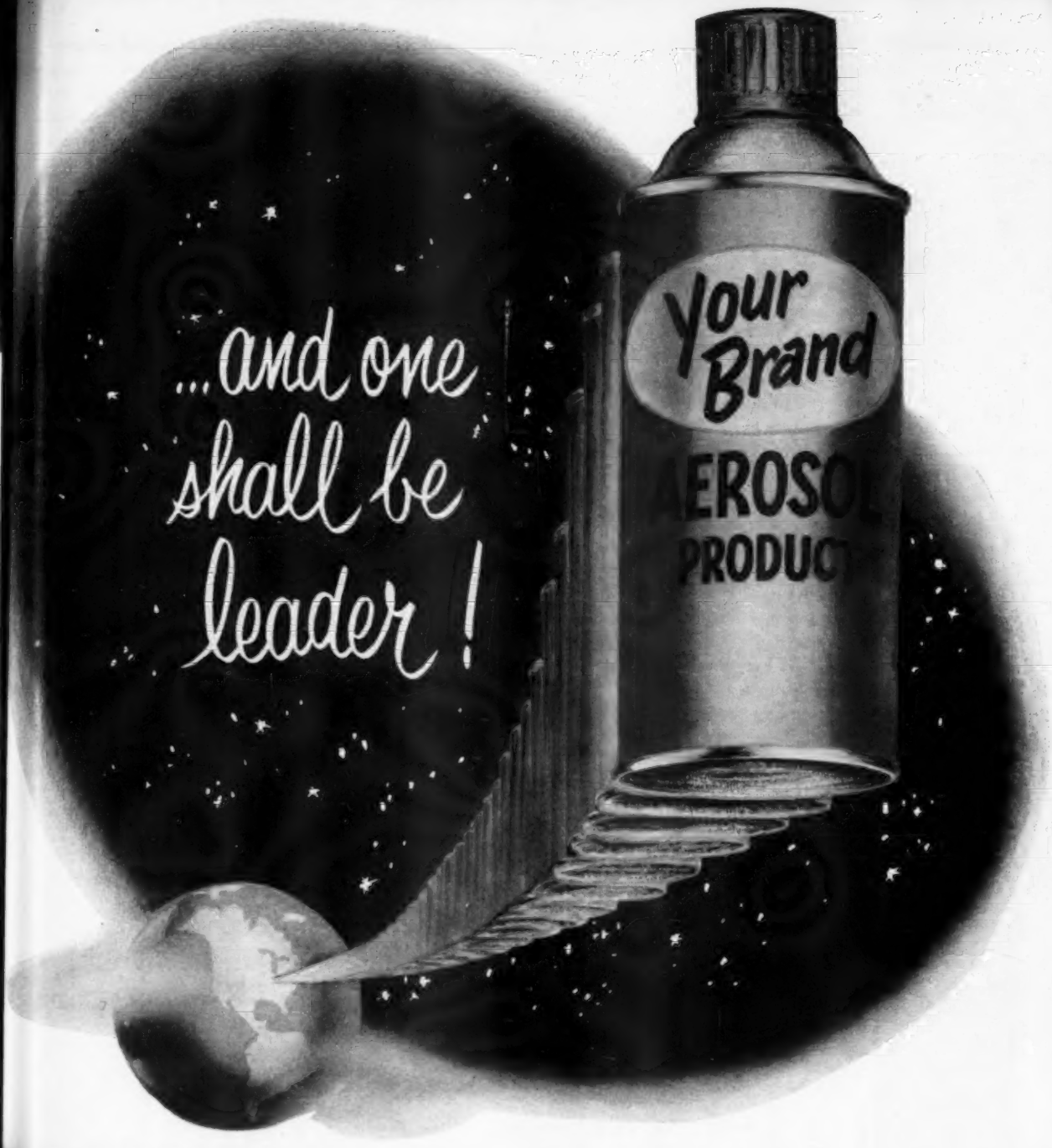
Left to Right: Electrolux's "Insect Killer" (winner—insecticides and repellents); "DCS Cutting Oil" (industrial products); "Gillette Foamy" (shave products); and "Fungi-Rex Foot Spray" (drug and pharmaceutical products).

Virginia Smelting's "Animal Repellent" won the prize for the best in the "Other Household Products" category.

Winner of both the 'Grand Award" and the citation as best food product was Andersen's "Sizzl-Spray."

"Chanel No. 5 Spray Colonge," aerosol version of the world-famous perfume, won in the perfumes and cologne class.

Sheffield's "Quik-Spray" (paints and protective coatings); "Nail Dri" (Other Personal Products); 'Brite Set Hair Spray" (hair preparations) and "Avon Klean Air" (room deodorants).



And one shall be leader... Business leadership isn't an honorary degree—it's earned by doing a job better than anyone else!
Chase stands at its 29th year milestone, acknowledged leader in packaging for one reason: superior research on more difficult problems in more product classes.

PRODUCTION VERSATILITY — Our facilities will handle oil and water base, liquid and foam products, of all types in small or large quantities. No minimum run required and no maximum limit!

INCREASED PLANT FACILITIES — Our plant is centrally located for ideal distribution, with both rail and truck facilities. We offer warehousing, drop shipping in bulk lots, direct pick-up and routing by major national truck or rail lines.

Write or Phone: **CHASE PRODUCTS COMPANY**—Maywood, Illinois

Contract fillers of AEROSOL and PRESSURIZED PRODUCTS

Plasti-Kote Sales Way Up

Over one million cans of aerosol spray paint were sold by Plasti-Kote, Inc., Cleveland, as a result of the firm's recent 60-day "Million Can Sales Campaign," it was reported last month. This was the largest sales campaign in the history of the company with over 60 sales representatives participating and competing for the $5,000 "Pot Full of Gold" cash awards.

The sales campaign is part of Plasti-Kote's over-all expansion program this year. During 1958 the firm introduced a number of new products, including a hammer finish spray paint and a complete line of car color aerosol touch up sprays to match colors of 1957, 1958 and 1959 automobiles, thus bringing to 284 the number of different aerosol paint colors the company is marketing. In addition, Plasti-Kote expanded its facilities by installing new highly automated filling equipment to meet growing production requirements and a new 30,000 sq. ft. shipping and warehouse department was added to handle the increase in sales volume. Plasti-Kote has also expanded its Canadian warehousing facilities to accommodate the market in that country. The company now has warehouse facilities in Montreal, Toronto, Wiinepeg, Vancouver, in addition to Los Angeles, Honolulu, and Mexico City.

Herbert D. Fine, president, reports that Plasti-Kote sales for the first ten months of 1958 are 107% ahead of a similar period one year ago. Mr. Fine predicted that the aerosol industry in 1958 will sell 60 million cans of aerosol paint and that industry sales will total 100 million cans within the next two to three years.

•

McNeil Names Blazey

Leland W. Blazey has been named director of the newly-created engineering division at McNeil Laboratories, Inc., Philadelphia. He will organize and direct expansion projects slated for the pharmaceutical firm. He has been in the engineering field for 17 years.

Croda Acquires New Subsidiary

Croda, Inc., New York, a major supplier of lanolin and lanolin derivatives and a wholly-owned subsidiary of Croda, Ltd., has announced the purchase of the Lanolin and Wool Grease Division of Hummel Chemical Co., New York.

This division will be known as the Hummel Lanolin Corp., and will be located in a new site at 185 Foundry Street, Newark, N. J. At the new location a modern manufacturing plant (photo above) has been installed for the production of USP lanolin, lanolin derivatives, and wool grease products.

•

Crown Marks Aerosol Anniversary

The rapid growth of aerosols in modern merchandising recently was presented in graphic form to top executives of chemical, food, drug, and cosmetic companies by Crown Cork and Seal Co., Philadelphia. In a colorful broadside sent to 8,000 presidents, plant managers, sales managers, and purchasing agents, Crown contrasted the 1958 aerosol sales predictions of 600 million units with the first shipment of aerosol containers to a filler in the United States 12 years ago. This shipment, made by Crown to Airosols, Inc., of Neodesha, Kansas in November, 1946 was for 105,000 pressure insecticide containers. Today, the advertising presentation reports, Crown makes more aerosol containers than any other manufacturer.

Since the initial shipment which pioneered a packaging revolution 12 years ago, the aerosol industry has developed into a $500 million retail business. Predictions are that this figure may be doubled in 1959.

FOR CREATIVE STYLING

BOTTLE CLOSURES
EVERY STYLE FOR ANY AND ALL SIZE BOTTLES

AEROSOL CAPS - CANS
NEW CONCAVE VALVE DOMES
FLAIR VALVE DOMES
STRAIGHT WALL VALVE DOMES
in BRASS polished or clear . . . STEEL in all finishes . . . ALUMINUM-polished and gold finished . . . or your own specifications.

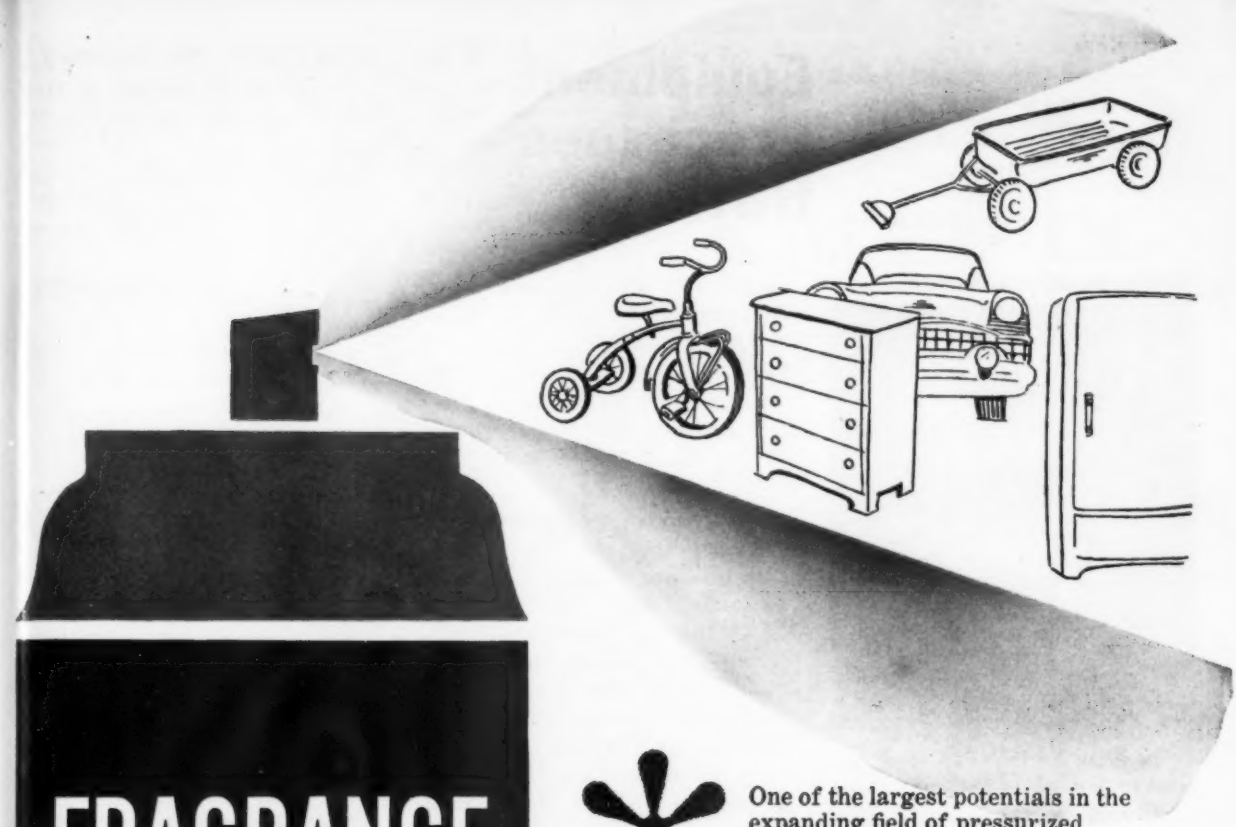
CONTAINERS
FLACONETTES
GOLD PLATED PERFUME FUNNELS
LIPSTICK CASES
in handsome gold finished metal

National Sales Agents • MONROE-DANFORD & CO. • 50 46th St., P.O. Box 807, Weehawken, N. J.

Special Coatings and finishes on Containers and other Aerosol Components

Silk Screening • Printing on Containers

Metal Fabrications INC.
WATERBURY, CONNECTICUT



FRAGRANCE APPEAL for your AEROSOL PAINT !

One of the largest potentials in the expanding field of pressurized products is the market for aerosol paints. Combining the convenience and tidyness of the aerosol package with the nation's current "do it yourself" mood, spray paints for touching up toys, cars, furniture, woodwork, appliances and a host of other household tasks have a sure-fire appeal. With their primarily indoor function, it is particularly important for aerosol paints to be either odorless, or pleasantly scented. This involves both masking and/or reodorizing the solvents and the resins, at the same time keeping the total formulation compatible with propellent and container. The D&O Aerosol Testing Laboratories have successfully resolved this problem for a number of different aerosol paint products, including *lacquers, enamel, paint removers* and *solvent combinations.* This experience, and the facilities of the labs, are at your service! Consult D&O.

"Essentially for you"

D&O ESTABLISHED 1796

Our 160th Year of Service

DODGE & OLCOTT, INC.

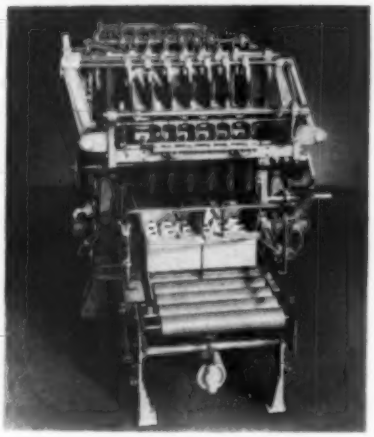
180 VARICK STREET • NEW YORK 14, N.Y.

Sales offices in Principal Cities

Essential Oils • Aromatic Chemicals • Perfume Bases • Flavor Bases • Dry Soluble Seasonings

Equipment—Processes—Bulletins—

Automatic Aerosol Caser



The first machine designed specifically for gentle but rapid automatic casing of empty aerosol containers has been announced by Emhart Manufacturing Company's Portland, (Conn.), Division.

Handling two cases at a time, the new Standard-Knapp packer speeds seven-ounce or 12-ounce containers through the line at the rate of 240 cans per minute in a 3 x 4 x 1 pattern. Changing over grid and pusher plates to handle either can size takes 15 minutes.

The empty aerosols must be lowered, not rolled, into the cases. This type handling prevents chipping or scratching of the can finish.

•

New Sulfonate Detergent

A new sulfonate detergent exhibiting exceptional detergent properties has recently been developed by Emulsol Chemical Corp., Chicago. It is said to be an unusually water soluble alkyl aryl sulfonate which will be offered under the name, Emcol P10-49. It is recommended for use in detergents for "hard-to-clean" applications, such as for metal surfaces, chemical glassware, liquid white sidewall tire cleaners, bubble baths, cosmetic shampoos, etc.

It is reported to show excellent compatibility with alkaline and acid detergent builders, permitting its use in the formulation of detergents which will exhibit minimum hazing and clouding tendencies. Full details available in bulletin #54 from Emulsol at 75 East Wacker Drive, Chicago 1.

•

CSMA Proceedings Available

A complete report of the meetings, all papers, and committee reports of the 44th mid-year meeting of the CSMA (held last May 19-21 in Cincinnati) is available by writing directly to the office of the CSMA, 50 East 41st Street, N. Y. The Proceedings cost $7.50 per copy in the U. S. and Canada and $8 per copy to other countries. Each registrant at the meeting received a copy free.

•

Resinous Paint Ingredient

A new resinous solution especially designed for a diverse range of aerosol paint applications has been developed by the Chlorinated Products Division of Diamond Alkali Co., Cleveland, Ohio. Called "Darasol," the material will be distributed by The Kerden Co., P.O. Box 1076, Station A, Cleveland.

In aerosol form, the new Diamond product is said to be non-flammable, provide a low odor factor, and eliminate valve clogging and the need of special valve treatment. The manufacturer also reports "Darasol" provides a number of other properties and advantages. Pigments and coloring materials of aerosol formulations do not settle out into solid masses in the container. The product, exceptionally fast drying, makes it ideal for the amateur to use. Also, it does not sag and run under ordinary application of even heavy coats.

According to Diamond, coating applications have been developed and finished formulations are available for protecting plated automobile parts and accessories, marine hardware, garden tools during storage, as well as for general waterproofing, metallic paints, pigmented paints, and dye colors.

Laboratory and field tests to date indicate the material is alcohol-resistant, salt-resistant, and acid-resistant. Luster, film hardness, and resiliency can be controlled for special applications.

The quick-drying action of "Darasol" is reported to prove particularly advantageous in paints pigmented with color other than dye on such work as painting guide lines on industrial plant floors and walls, spray stenciling, and color-coding of packages for shipment.

The material is available in one-, five- and 55-gallon drums, either in clear or a wide range of colors. Complete information and samples of the base material and aerosol products utilizing the base material are available upon letterhead request.

•

New Metal Overcap

A new metal overcap that snaps tightly onto the shoulder seam has been announced by Ludwig Closures, 185 Oakland Street, Brooklyn 22, N. Y. The unit is said to give greater strength and stability to the can, and to offer complete protection to all varieties of valves and actuators.

The new cap may be used with a plastic, cellulose band which makes cans tamper-proof and pilfer-proof. This device, the company reports, will prevent gradual dispensing of the product before sale off the retail counters, as well as sampling or cap-switching.

meta DELPHENE®

IS THE COMPLETE

INSECT REPELLENT

meta Delphene, Hercules diethyltoluamide, is a complete insect repellent concentrate in itself, ready for you to formulate into packaged lotions, aerosols, sticks, or specialty items. No other repellent need be added to formulations based on meta Delphene. ***As a matter of fact, attempts to reduce meta Delphene content by substituting equal amounts of other repellent materials have increased costs, lowered protection time against flies and mosquitoes, and lessened the finished preparation's resistance to wiping.***

Representatives of Hercules Powder Company will be pleased to discuss comparative data with you. As the first to produce commercial quantities of diethyltoluamide, Hercules has assembled important technical and sales research information on meta Delphene. Sales of these products have now totalled many millions of units. We invite you to contact any of the offices listed below.

Agricultural Chemicals Division

HERCULES POWDER COMPANY

INCORPORATED

Wilmington 99, Delaware

Atlanta; Birmingham; Boston; Chicago; Dallas; Denver; Detroit; Fresno; Greenville, Miss.; Phoenix; Raleigh; St. Louis; San Francisco

meta DELPHENE®

ND58-2

TMC

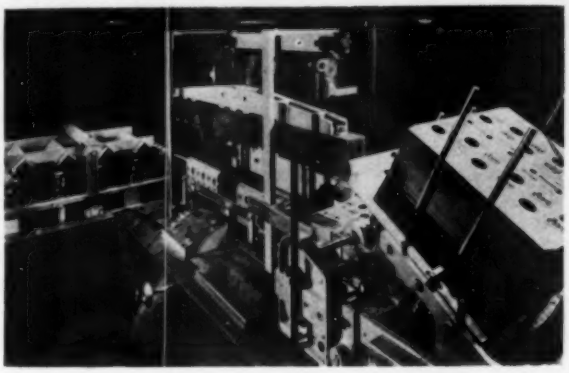
55, 75, 132 CU. IN.
240 LBS.
ICC APPROVED

KING SIZE
aerosol containers
INCREASE SALES

It is a proven sales-building axiom that when you make it easier to use, you make it easier to sell. Manufacturers of a wide range of fluid, viscous and powdered products are increasing sales by increasing uses with TMC KING SIZE Pressure Dispensers. They are a potent sales weapon for you! Write or phone for the "Latest Thinking on Merchandising Under Pressure."

TUBE MANIFOLD
CORPORATION
LUdlow 7900
419 Bryant St. N. Tonawanda, N. Y.

Container Corp. Announces Aerosol Multipacker



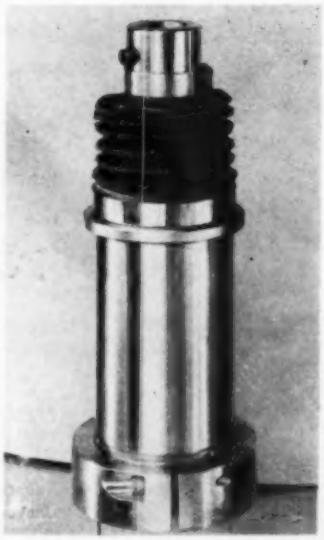
In the "Wrapak" 70, the flat cartons may be seen at right the completed containers in the left background.

A new, flexible multipacker, specially designed for aerosol containers and similar items, has been announced by the Container Corp. of America, Philadelphia. Called the "Wrapak 70," the unit handles aerosol cans at speeds up to 70 cartons a minute in a single or double line.

The machine forms a special two-to-12 unit carton that permits multiple shipment and sale of aerosol products. In addition, the new machine is said to be adaptable to folding cartons, plastic squeeze bottles, and square or round fibre cans. It accommodates "Wrapak" cartons in sizes up to 18 inches long and six and five-eighth inches wide, and can adjust to heights up to eight and three fourths inches.

The "Wrapak 70" is completely automatic and requires about 30 minutes for conversion from one size container to another. The only manual operation is the feeding of the carton hopper, and when cartons or products run out, the machine stops itself.

Automatic Can Crimper



A new automatic can crimping head that is equipped with a valve and can-centering device has been announced by John R. Nalbach Engineering Co., 6139 W. Ogden Avenue, Chicago 50. The head will crimp any can shape or size that has a standard one-inch top opening, and is adjustable for both height and depth of crimp.

The crimping jaws, cap guide, and mandrel can be quickly removed for cleaning, and this can be done with the crimping head remaining on the machine. The unit is sealed with a neoprene boot to keep out washing solutions, dust, and dirt.

The hardened tool steel crimping jaws are segmented and free to pivot, thus requiring a minimum of force on the mandrel to crimp. According to the company, this results in a smaller air pressure and air volume requirement when an air cylinder is used for crimping, plus reduced wear on all moving parts.

Chloromycetin Aerosol

A colorless tincture of Chloromycetin in aerosol form has been introduced in Great Britain by Parke Davis & Co., Ltd., Hounslow, Middlesex. The product is being packaged in a three ounce container selling for the U. S. equivalent of $5.25.

"Stalfort Story" Booklet

"The Stalfort Story," an illustrated 22-page booklet, has been published by John C. Stalfort & Sons, Inc., of Baltimore, Md. It tells the story of the Stalfort company from shortly after the close of the Civil War until the present, and pictures and describes the firm's advanced aerosol loading facilities and contract packaging facilities for waxes, dyes, polishes, and cleaners.

Equipment for filling aerosol containers with powder under sanitary and controlled humidity conditions is shown, as well as automatic filling lines with a capacity of 85 aerosol containers per minute. Photographs show stainless steel mixing and holding tanks, as well as bulk mixing tanks and automatic filling machines for private label packaging in conventional containers.

The booklet is available directly from the company at 319 West Pratt St., Baltimore 1, Maryland.

•

New Propellant Pump

A compressed air-operated propellant pump that automatically shuts itself off when demand slackens has been announced by Druk-Pak, Inc., Zurich, Switzerland. The Waldherr Druk-Pak unit is a multi-purpose pump, said to be satisfactory for any operation where the handling of large or small quantities of fluorinated hydrocarbons is involved.

The unit comes in several models and has a long stroke. It reportedly has eliminated the prewarming of refrigerant and propellant storage cylinders and all the special controls, valves, pressure gauges and thermometers usually necessary.

•

Beckman Analyzer Catalog

An eight-page, two-color catalog describing a complete line of process analyzers, has been issued by Beckman Scientific and Process Instruments Division, 2500 Fullerton Road, Fullerton, Calif. Included are industrial pH equipment, gas chromatographs, oxygen analyzers, and others.

"Whirlwind" Screw Capper

The Scientific Filter Co., 69F Rose Street, New York 38, has announced a portable "Whirlwind" screw capper with an adjustable clamp stand. The unit is equipped with a Universal current motor and will handle screw caps of every type on any type, shape, or material container. It has suspension spring mounting and an adjustable tension device in the hand piece that controls tightness of the cap, to assure uniformly tightened caps.

DARASOL*

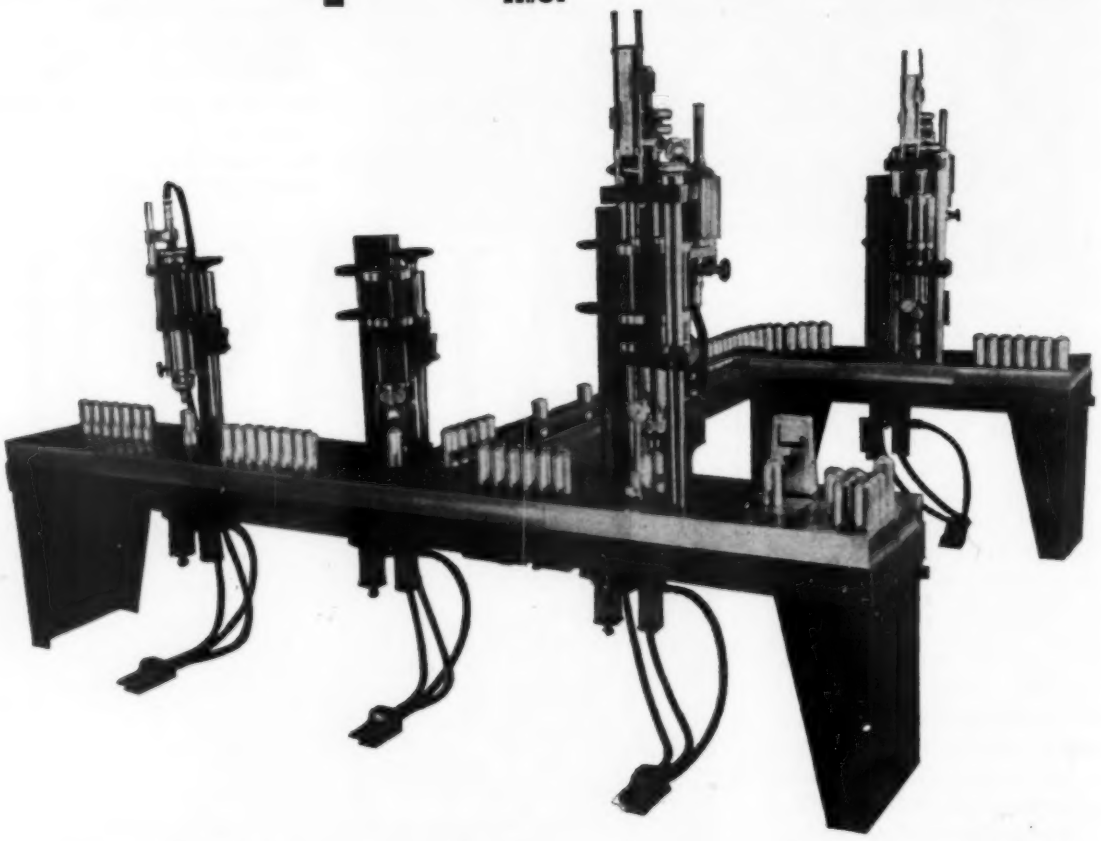
DARASOL is a versatile NEW solution suitable for either protective or decorative coatings. Protects against rust . . . provides waterproofing and fireproofing qualities . . . and its remarkably fast drying action makes this new Diamond development ideal for use in paints. It's nonflammable . . . has unusually low odor factor. Available in gallon, 5-gal and 55-gal drums. For further information and FREE 3-oz sample, write Diamond Alkali Company, 300 Union Commerce Bldg., Cleveland 14, O.

DARASOL is distributed by The Kerden Company, Cleveland, Ohio

Diamond Chemicals

druk pak inc.

Supplying internationally for aerosols.



druk pak

Manufacturer:

Johann Waldherr,
Machine Builder
Kafertaler Str. 162,
Mannheim, Germany

Sales Representatives:

druk-pak, inc.,
Merkur Str. 36,
Zurich 7, Switzerland

Publishers of "European Aerosol Survey" a quarterly periodical and "Aerosol Packaging" an Exposé covering all aspects of the aerosol package.

A WM-DP semi-automatic Pressure Filling Unit with Product Filler and Valve Clincher serving two Propellant Chargers. These sturdy and efficient machines cover your loading requirements, large or small. Some details on the

Propellant Charger WM-DP 340:

Stainless Charging Cylinder, adjustable capacity— 5 to 375 g.
Charge Tolerance, under 100 g, fractional—over ± 1 g.
Operating Pressure, according to valve 6 to 8 Atü.
Gas Loss, less than 1%
Capacity: The above line with two Propellant, Chargers does over 8500 twelve ounce units per 8 hr. day. In six ounce units, according to valve and charge, 10 to 13 per minute.

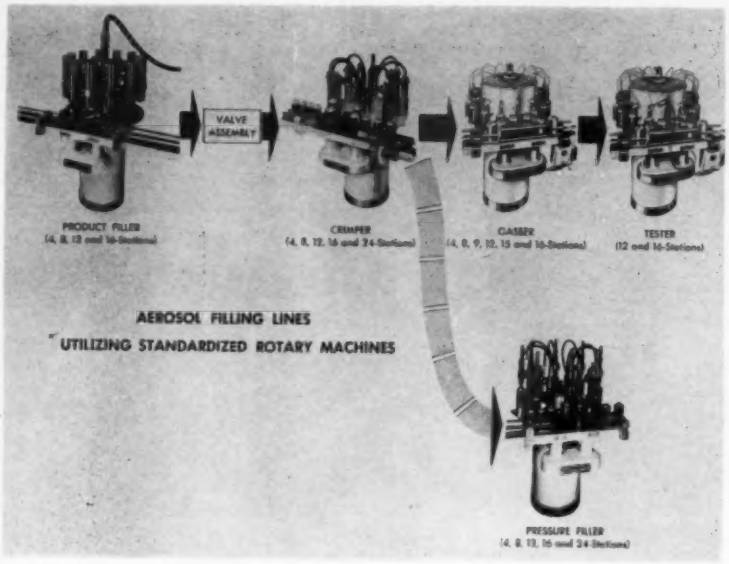
Other WM-DP Products:

Magnetic Chain Link and Tank Type Test Baths, Conveyor Lines and Tracks, Mufflers and Fast Exhaust Units, Propellant Pumps, Purgers, Complete Line of Laboratory Equipment, etc.

Valves for metal cans, glass bottles, foams and small (50 mlg) metered quantities. All valves are quick gassing, pressure fillable.

Concentrates, a large line of tested products, some for dilution up to 1:9.

Arthur Colton Announces New Flexible Aerosol Line



A NEW aerosol production line designed to meet a wide variety of aerosol filling requirements at speeds of from 60 to 200 cans per minute has been announced by the Arthur Colton Co., Detroit. The new Colton-Alpha line is made up of a series of continuous rotary machines, each with a star-wheel arrangement which removes containers one-at-a-time from the conveyor line and deposits them in stations on the periphery of a rotary drum. The machine's function is performed while the containers travel around the drum.

Each machine is available in a variety of station numbers to suit individual production requirements, and each is equipped with a variable-speed drive to permit accurate synchronization of the unit's special function. Included are:

1. "Model 1051" liquid filling machines made in four, eight, 12 and 16 station types.
2. "Model 1351" crimpers made in four, eight, 12 and 16 station models. Model 1352 machines perform both vacuum and propellant-purge operations as well as the crimping function and are available in an added 24-station type.
3. "Model 1451" gassers for pressure filling of nitrogen, nitrous oxide and carbon dioxide, etc. are made in four, eight, 12 and 16-station models. Model 1452 machines that also shake the container are made in nine and 15-station types.
4. "Model 1701" testers are made in 12- and 16-station types.
5. "Model 1651" pressure fillers for fluorinated and other hydrocarbon propellants are made in four, eight, 12-, 16- and 24-station types. Fill capacities from zero to 45-, 100-, 300- and 500-cc can be had.

The line's crimping machines provide a unique crimping and vacuum-propellant purging function that gives a maximum concentration of propellant in the space above the product. The Colton-Alpha method of pressure filling at 500 to 600 psi with only one electrical connection to a motor, which can easily be explosion-proofed, is said to eliminate what can be a hazardous operation with butane or propane propellants. For propellants that have to be mixed with the product, a shaking operation is performed at each station on Colton-Alpha gassers.

All machines in the standard Colton-Alpha rotary-index line have no-can, no-fill features. One motor in the base of each of the machines drives the rotary drum and star index wheel.

world's largest assortment of metal and plastic

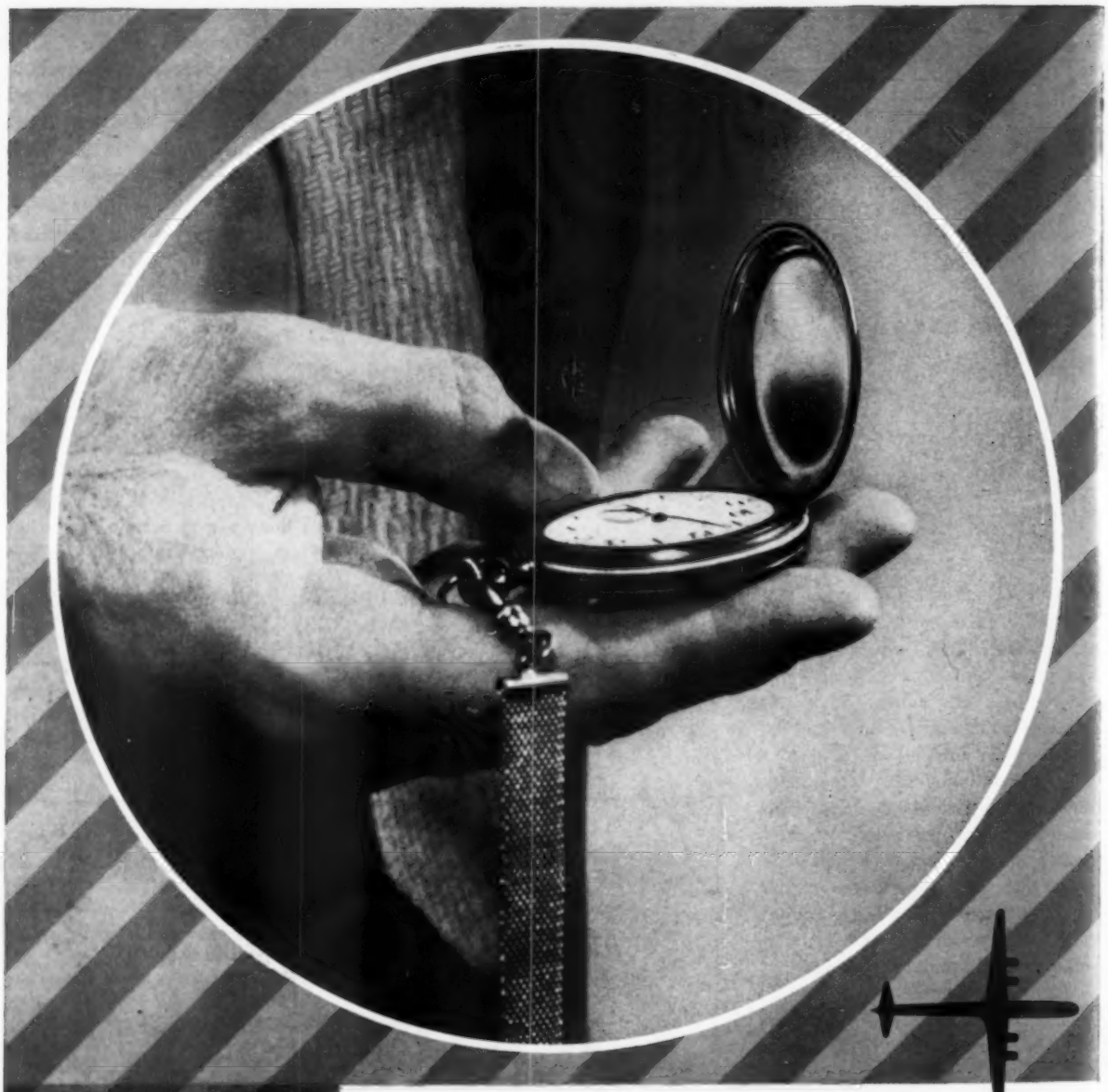
AEROSOL CAPS

all sizes and styles for all types of aerosol containers

write for samples and prices

THE **WALTER FRANK** ORGANIZATION

4102 WARREN AVENUE HILLSIDE, ILLINOIS



THE WORLD OVER

KLM

ROYAL DUTCH AIRLINES

"The time just flew!"

You've crossed the ocean – and it's hard to believe the trip is over so soon. But it's easy enough to understand once you've flown KLM. There's such solid comfort. And such a friendly climate aboard. What's more, the cuisine is superb. Why, even the simplest fare becomes a delicacy in the artful hands of a KLM master chef.

These are just a few reasons why people who travel often by air take the Royal Dutch route – to all points of the globe. Next time you plan a long air trip, why not shorten the miles? Let a KLM flight crew give you all the attention in the world. It makes such a royal difference. See your Travel Agent or call your nearest KLM office.

KLM Royal Dutch Airlines, 430 Park Avenue, New York 22, N. Y.

Additional "Equipment, Processes, and Bulletins" appear on page 114.

Jordan Firm Moves Offices

W. Alec Jordon Associates, chemical marketing consultants and technical public relations specialists, have moved their offices from 52 Park Avenue to 290 Park Avenue, New York.

CSMA's 45th Year

(*From Page* 51)

early adoption of the Peet-Grady test for evaluation of insecticides was followed by a series of modifications year after year, as new and previously uncalculated variables were turned up by various investigators.

The association was instrumental in successfully defending the Terry patent action. The plaintiff in this case had obtained a patent on a pyrethrum-kerosene type base insecticide and brought suit against Standard Oil, manufacturers of (Quick Henry the) "Flit," and the biggest firm in the insecticide business. Had the suit been successful, it might have acted as a strong brake on the rapidly expanding insecticide business. With the help of a legal fund contributed by members of the association, however, the suit was defeated and the Terry patent declared invalid.

Another activity of this same general period (the early Thirties) was National Insect Killing Week — the idea being to stimulate sales through store displays, cooperative advertising including posters, streamers, bill boards, etc. The project never really got off the ground and was abandoned after a brief trial.

A change in name of the organization was made in 1932—the new name adopted being the National Association of Insecticide & Disinfectant Manufacturers, or as former president Mel Fuld insisted on calling it for years, the N.I.A.D.M. The present name, the Chemical Specialties Manufacturers Association, is still more recent, the change to this form having been officially registered on Jan. 13, 1950, after adoption in 1949.

With the change to the present name — the C.S.M.A. — a divisional set-up was adopted, and with the recognition that the growing aerosol industry would outgrow its original status as simply an adjunct of the insecticide business, an Aerosol Division of C.S.M.A. was established. The growth of the Aerosol Division has been extremely rapid and it is now the largest and perhaps the most active division of the association.

The new constitution and by-laws adopted on June 13, 1949 established five separate divisions: Insecticide; Disinfectants and Deodorants; Wax and Floor Finishes; Soap, Detergents and Sanitary Chemical Products; and Aerosols. The Automotive Division came later.

It is interesting to note that, on the N.A.I.D.M. program in June 1946 there was a paper titled "Aerosol Marketing." In December 1946 an aerosol symposium was given, with the title "The Expanding Field for Aerosols." Throughout 1947 and 1948 there were scheduled meetings of aerosol committees and papers on various aerosol subjects.

By the December 1948 meeting of the Board of Governors interest had increased to a point that H. E. Peterson proposed that a separate Aerosol Division be set up within the structure of the N.A.I.D.M. The board voted favorably and appointed a committee to complete details for the formation of this new Aerosol Division. The Division was then quickly formed and in June 1949 the first formal meeting of the new Aerosol Division was held.★

Canadian Meeting

(*From Page* 40)

berta, and Manitoba) also have laws that regulate pesticide sale and use. He described the laboratory services available to his department, but pointed out that these are exclusively for checking *registered* products, and cannot offer analyses or research before a pesticide is registered.

THE FAST, SURE WAY TO APPLY

AEROSOL OVERCAPS

The CONSOLIDATED MODEL H-O-F CAPPER

.... **Automatically** sorts and applies all the various types of aerosol caps now being used.

.... **Applies** odd shapes as well as conventional types.

.... **Equipped** with variable speed controls and can be arranged for speeds from 60 to 250 caps per minute.

.... **Changeover** from one size container to another can be made easily and quickly.

.... **Easily** fitted into any aerosol filling line.

If you are using aerosol containers, be sure to get all the facts about the Consolidated H-O-F Capper for applying the overcaps before you buy.

Write for complete information

CONSOLIDATED PACKAGING MACHINERY CORP.

1400 West Ave., Buffalo 13, N. Y.

Mr. McLeod demonstrated, through use of colored slides, the rearing and testing procedures carried on in the Pesticide Testing Laboratory. He revealed that the laboratory is currently rearing 40,000 flies per week, plus similar numbers of mosquitoes, roaches, and other insect pests.

The last formal paper on the program of the meeting was "Case History of A Successful Sales Campaign," by G. H. Wood, president, of G. H. Wood & Co., Ltd., Toronto. Mr. Wood pointed out that it is wise to include every member of the organization in a sales campaign, especially personnel in the non-sales category.

The campaign of G. H. Wood & Co. involved a "Grand National Sales Race," in which regional sales teams each made up an entry for each of the nine furlongs (weeks) of the race. Quotas were carefully plotted and checked to insure that one entry didn't run away with more than its share of the nine furlongs, and cash prizes were offered to the salesmen and to the people in the company who picked the proper order of finish.

The campaign was so successful. Mr. Wood declared, that the company's sales were 26.2% over the similar period for the previous year.*

•

P & S Names Ungerland

Joseph A. Ungerland has been appointed vice-president of Polak & Schwarz, Inc., New York essential oils firm. He has been with the company for 18 years.

Aerosol Enamels

(*From Page* 38)

the ultimate paint composition. Refinements will certainly be desirable to prepare compositions meeting specific requirements.

Valves

The choice of a valve for an aerosol paint product should be made with considerable care. It is well known that almost any aerosol valve will spray paint formulations, but only those specifically designed for paints

give satisfactory results. Valve design influences particle size distribution, geometry of the spray cone and discharge rate. We have observed that a spray rate of about 0.75 grams per sec. — equivalent to 0.45 grams of paint — is very convenient for the user. Discharge rates higher than this tended to produce overly thick coatings and to introduce sagging and bubbling problems. The particle size distribution should be as nearly mono-disperse as available valves will permit. Particle sizes of about 50 microns offer the best compromise between excessive numbers of airborne particles and film difficulties which accompany excessively coarse sprays.

Factors influencing shelf-life of surface-coating formulations were not studied in this work. It is known, however, that settling problems are common with white and gray enamels. Soya lecithin, aluminum stearate and water are all known to be useful in alleviating settling problems. Any formulation should, of course, be extensively shelf tested before adoption.

Summary

Several generalizations can be made concerning the formulation of alkyd enamels.

1. Viscosity of concentrate should be approximately 20 sec. Slightly higher viscosities can be used if the propellant concentration is increased above 40%.
2. Solvent should have a solubility parameter of 8 - 9.
3. The distillation range of the solvent should be such that 50% distills below 230°F. while the distillation end point is 340°F.
4. Resin concentration should be 25 - 30% in the concentrate (15 - 18 in total formulation).

By applying the above general principles to aerosol paint formulation studies, it is possible to prepare a formulation with the assurance that the best selection of components has been made. The exhaustive examination of all components is eliminated, making it possible to concentrate laboratory efforts on promising formulations.

References

1. Downing, R. C. and Palmer, F. S.; Aerosol Coating Compositions; Paint and Varn. Prod. (Sept., 1953).
2. Palmer, F. S. and Morrow, R. W.; Formulation of Aerosol Enamels; Proc. CSMA, 66, (Dec., 1952).
3. Palmer, F. S.; Formulation of Aerosol Lacquers; Proc. CSMA, 30, (May, 1953).
4. Morrow, R. W. and Palmer, F. S.; A Method for Determining Pressure and Consistencies of Aerosol Coating Compositions; Proc. CSMA, June, 1952.
5. Burrell, H., Solubility Parameters of Resins, Off. Digest 1069, November, 1957.
6. Burrell, H. A.; Solvent Formulating Chart, Off. Digest 1159, November, 1957.
7. Burrell, H.; Solubility Parameters for Film Formers ibid 726, October, 1955.
8. Hildebrand, J., and Scott, R. L.; The Solubility of Nonelectrolytes, Reinhold Pub. Co., N. Y., N. Y., 1950.★

Scranton Aerosols

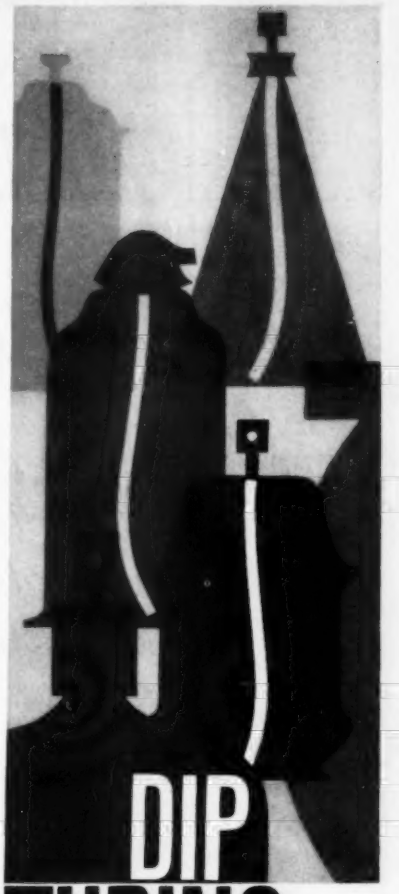
(*From Page* 39)

sound an alarm when even the slightest leakage occurs. Other types of safety facilities also have been installed elsewhere in the plant for the protection of the employees.

Located in a separate room between the filling lines is a complete aerosol laboratory, staffed by a group of chemists who are charged with overall quality control. Also working from the laboratory are quality control assistants, who check and inspect production fills of both concentrate and propellant for over and underfills. Other assistants inspect units on the lines for mechanical and physical defects, and one is assigned to the labeling machine to check that the units are satisfactorily labeled or litho printed.

The Scranton firm quickly overcame one of the potential complications sometimes encountered in other aerosol plants — the receiving and storage of bulk concentrates. Receiving facilities for tank truck and rail tank car are accessible to both filling lines, and through them rapid handling of outgoing filled containers is readily accomplished. Facilities are also available for the storage of propellants which are received by tank truck and rail tank car.

Of the space allocated for the aero-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Capillary sizes for drop-by-drop dispensing	Special types for Fire extinguishers, Food Aerosols

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sol filling operation, more than 100,000 square feet is fireproof. The company also has its own railroad siding, and shipping bays for the more than 60 trucking firms that service the Scranton area.

The decision to locate in Scranton was based on a number of other considerations. First, Scranton is what is known as a "distressed labor area", which means that there is more than enough skilled and semi-skilled labor available for an aerosol filling operation. Second, Scranton is one of the leading manufacturing and distribution areas in the Northeast, and can claim more than 40 million consumers within a 250 mile radius. And finally, an available plant facility, coupled with lower taxes, made locating in Scranton economically practical.

The Scranton Corp. is already considerably diversified. Other divisions of the corporation include: the Scranton Lace Division, which makes lace curtains, tablecloths, plastic shower curtains, etc.), Symphonic Electronic Division (tape recorders, high-fidelity recorders and record players), Hal Roach Studios Division (television and motion pictures), Mutual Broadcasting Network (radio broadcasting), Storm-Vulcan Division (automotive machinery) and the Eicor Division (Electric motors, invertors, etc.).

When such a highly-diversified company enters the aerosol field, there really must be something in it!★

Aerosol Panel

(*From Page* 50)

aerosols, the contract filler took on many additional responsibilities he had not heretofore faced—the technical and specialized know-how; the enormous capital investment; research and development consisting of promoting and introducing new items; the broadening of the uses of existing items; packaging changes and developments; warehousing and shipping changes because of various municipal and federal governmental regulation changes.

". . . As a practical example of the services offered by the custom filler, a customer can come to a contract loader with an idea of adapting an existing product to the aerosol or even of developing an entirely new product idea. The laboratory assigns this to a chemist and that becomes *his* project. After the development and testing is completed in the laboratory, the customer approves the product, and is then ready to see how it will perform in the market place. The contract filler is willing to make a test run for test marketing purposes so that merchandising and advertising departments of the customer can determine whether or not the program should—at this point—go ahead as a marketing project.

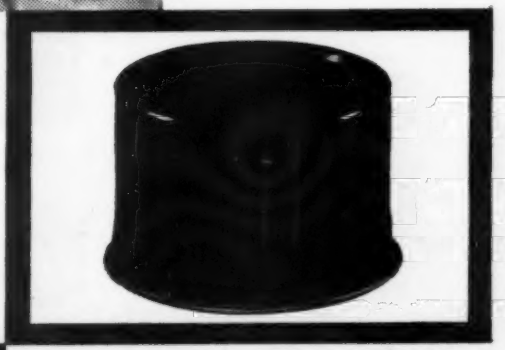
"All of this is done by the contract loader with *no* capital investment or expense from the marketer of the product. Then, where do we get our revenue? If and when the product is successful, then, of course, the contract loader expects the filling business; which means all of these services mentioned above are *given* in order to acquire filling contracts from the merchandiser."

Mr. Lawrence pointed out that there are few other industries where the interrelation of suppliers, and the exchange of information between supplier and customer, is so free. "In effect," he declared, "the supplier of the propellant, container, valve, and the custom packager hold the hand of the prospective customer during the time he is getting his product ready for market."

Mr. Lawrence also outlined the basic differences between the commonly used compressed gases and liquefied propellants in the industry; and explained why nitrogen is currently so successful for foods, toothpastes, and similar products.

Mr. Hollister gave the essential reasons why internal pressures and other factors have more or less dictated the size and the shape of the pressure can. He explained the technical improvements that have been achieved in recent years, and concluded with the prediction that the

best dressed aerosols are wearing...



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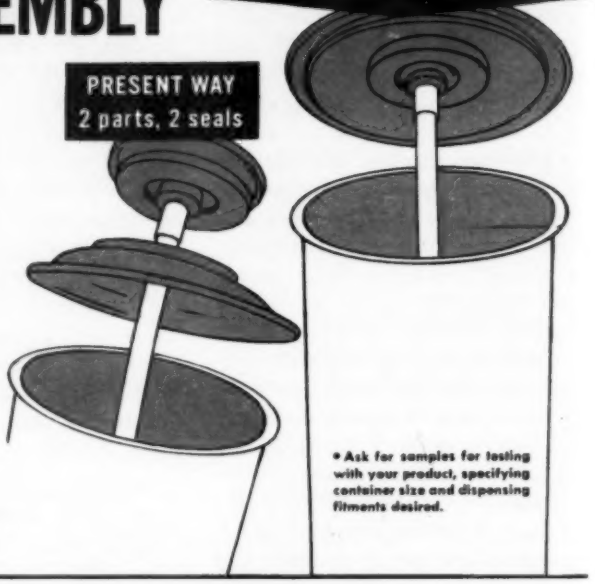

This new one-piece aerosol can-top is being made by large can manufacturers especially for OEL 500-Series Valves. It features pre-assembly of the valve in the can-top, eliminating the usual second crimping operation. Without altering the original OEL 500-Series Valve in any way, the new assembly provides a more compact, labor-saving assembly . . . additional safeguard against leakage . . . savings of ¾¢ to 2¢ per can.

All of the features of the 500-Series OEL Valve are retained, including adaptability to both pressure and cold filling, suitability for products pressurized with nitrogen, mechanical break-up dispensing without premium, etc., etc.

* Ask for samples for testing with your product, specifying container size and dispensing fitments desired.

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future would see increased use of aluminum as a basic container material, a trend toward further stylizing of the basic container shape, and improved decoration techniques.★

Aerosol Valves

(*From Page 46*)

manufacturer in attempting to supply a valve for such a product. The most common failures of valves when used to spray dry powders were clogging and leakage. Clogging occurs when powder particles build up in certain valve restrictions, eventually causing blockage of valve passages. Leakage occurs when powder particles build up on valve seats, causing improper shut-off. The solution to these problems has never been truly found. Presently there are dry powder aerosols being marketed, but with a maximum limitation of 10% powder. It has been found that a package containing less than 10% powder minimizes the problems of clogging and leakage sufficiently to allow marketing of these products. The solution to the above problems is currently being sought by the engineering departments of the valve manufacturers so that larger percentages of powder can be packaged to make possible such products as powdered plant sprays and bath talc sprays.

Many believe the answer to this problem may be the development of an improved dry powder aerosol formulation. This school of thought contends that, if the right suspending agent could be found so that the dry powder could be suspended as a colloid in the propellant, then many of the present valve designs could be used succesfully. This may illustrate the close working cooperation necessary between the valve manufacturer and the formulator for the successful solution of mutual problems.

What new designs are forthcoming in valves? The trend can best be demonstrated by the recent development of valves for compressed gas propelled products such as dental creams, cosmetic creams, chocolate syrup and vitamin concentrates. These products required multiple orifice stem valves, functional actuators, product resistant linings for valve mounting cups and dip tubing materials which could withstand sterilizing temperatures necessary in food packaging. Who would have thought ten years ago that today it would be possible to pressure dispense products having the viscosity of toothpaste. Yet this is a reality because of the tremendous technical advance of the entire aerosol field.

Metered valves for compressed gas dispensed vitamin concentrates have been introduced very recently. This particular metering principle is also adaptable to such products as cough medicines, liquid coffee concentrates, and detergents. Sizes of the metered dose can be varied from 0.5 c.c. to 7.0 c.c., depending on the formulation and size of the container. Metered valves for the spraying of compressed gas propelled products will become available in the very near future.

Many pressurized food products such as salad dressings, toppings and beverage concentrates will appear on the market soon, as a result of proper valve designs and construction materials now being available.

Another new development is the availability of drop dispensing valves for such products as liquid aspirin, nose and eye medications, sweeteners and many other products requiring this type application.

Valve design changes will continue as long as new products, new containers, new packaging principles, and most exacting performances make these changes necessary.

The suitability of aerosol valves for products can best be determined by cooperation between the user and the valve manufacturer. The user knows what he wishes in valve performance. By discussing his needs with the valve manufacturer he can have these requirements fulfilled. Many of the developments discussed have been the result of close working arrangements between user and valve manufacturer. The problems will be many in the future, but the solutions will also be many, as can be indicated by past performances.★

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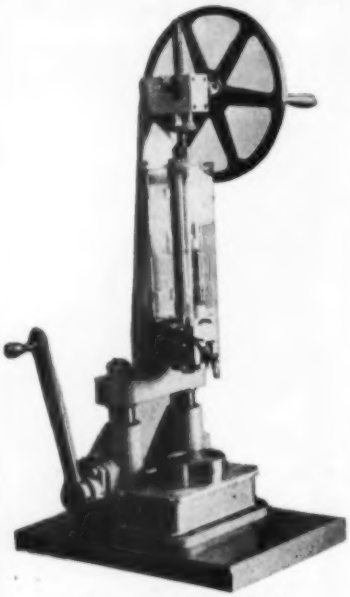

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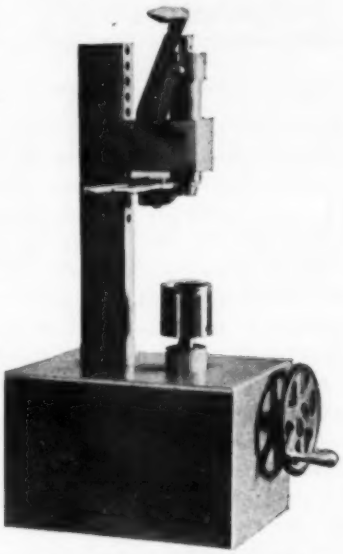

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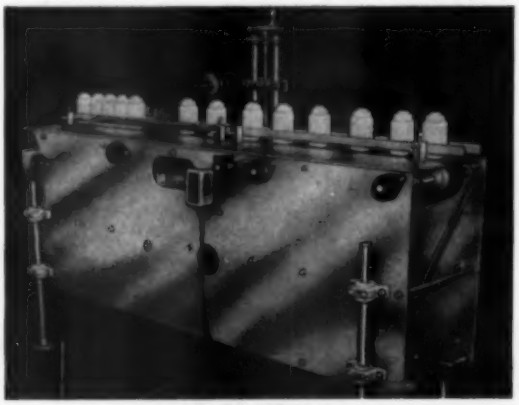

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New British Company

A new aerosol company, called Aerosol Associated Industries Ltd., has been incorporated at 18 Austin Friars, London E.C. 2, England. J. S. Bennett and L. T. Jackson are the principals.

Packaging Food Products

(*From Page* 63)

moves to a product testing area. It is at this point that the charged unit should be automatically pressure tested. A small charge of gas in the dip-tube is automatically withdrawn. Cans registering internal pressures above or below the prescribed limits are marked for rejection.

The container then moves onto a product testing area where the actuator or spray head is applied. In certain cases the spray pattern is tested by experienced personnel to assure proper function and application of the product. The tested container then moves into the final test area. The container moves through and is immersed in a water bath. It is at this point that the can or valve leakers are picked up by the appearance of bubbles in the test bath. The leakage test, while not fool proof, still offers relatively good control over valve or can leakers. In order to increase even more the efficiency of this step in the vitally important testing of food aerosols, Air Reduction is in the process of developing a fool-proof, low cost, micro-leak tester. The actual testing is to be accomplished by use of the infra-red principle, a method that is widely used in the missile, aircraft, and automotive industries and has gained wide acceptance.

The finished, tested container, as in all industries, is then labeled, over capped, and cased.

Summary

The packaging of pressurized foods and in many cases pressurized non-food items, other than whipped creams, is a brand new field. One local custom-packager and several of the leading suppliers in the can, valve, and gas fields have pioneered many of the developments to date.

The need for high speed, continuous, automatic machinery that will meet the many requirements of such highly specialized packaging is paramount. As mentioned earlier, the specialized equipment for manufacturing and tailoring a product to the aerosol can is an individual matter and must therefore rely on the specialized knowledge of the manufacturer.

The development of equipment and packaging concepts in food and non-food aerosol packaging is being directed along some of the following lines:

1. High speed crimpers that allow the continuous vacuum and gas closures.
2. Effective methods of cooling and controlling temperature pressure concepts of aerosol packaging.
3. High speed gassers and shakers that allow effective control of pressure and safety from possible bacteriological recontamination.
4. A low-cost, high efficiency method of leakage testing.
5. The cold filling of the liquid compressed propellants.

It can be readily seen that the pressurized package is *not* a fool-proof package. To increase the fool-proofness and in turn the number and acceptance of such products, a great deal more knowledge is required on the basic elements of packaging pressurized foods.

The efforts of the entire industry are required to develop and perfect the basics of this new field. The potential of the food and pharmaceutical field has been expostulated on by many. One of the requisites in attaining this potential is the proper packaging of this new entry to the food specialty field.★

Nitrosols in Glass

(*From Page* 64)

pellants where the maximum size currently recommended is 8-ounce capacity.

The use of the word "nitrosol" in this article is a coinage which in-

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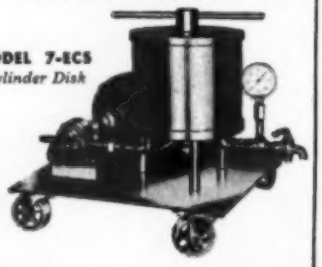
dicates nitrogen used as a propellant gas. The facts set forth herein will, however, be applicable to any true gas under compression.

Glass containers utilizing compressed gases are being marketed today.

Under the existing I.C.C. regulations a container of two-inch diameter or less and four-ounce capacity or less is exempt. The position of the Bureau of Explosives regarding nitrosols is that they have already granted exemptions on several packages up to six-ounce capacity. Studies on larger containers are not yet completed. Upon application to the Bureau of Explosives, where your product demonstrates a non-hazardous condition of use (all sizes), an exemption will be granted.

Revisions to the I.C.C. regulations are being considered at the present time. However, in advance of such revisions it is recommended that you consult the Bureau of Explosives before proceeding with marketing plans.★

For finer Aerosol Products Industry uses ERTEL FILTERS and ASBESTOS FILTER SHEETS



MODEL 7-ECS
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Various Sizes

WRITE FOR TYPICAL PRODUCT APPLICATION CHARTS & GUIDE

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Branch Office & Showroom New York City

Aerosols in Great Britain

(*From Page 56*)

British aerosol container manufacturer.

For local treatment of wounds and superficial infections in animals, Parke, Davis & Co. Ltd., of Hounslow, recently marketed Aerosol Choromycetin Tincture (colorless) in a four-ounce dispenser.

The growing importance of pharmaceutical packs can be gauged from a recent announcement in the *Chemist & Druggist* (Vol. 170, 1958, page 227). "The Commissioners of Customs and Excise have reviewed the position in relation to the dispensing pack scheme for exemption from purchase tax of official drugs and medicines supplied in aerosol containers. In order to meet cases where aerosol packs cannot qualify for exemption as Class A or Class B packs, the Commissioners are prepared to approve them as Class C packs. Under that arrangement the aerosol container must be the inner container and the remaining conditions as set out in Notice 78B must also be satisfied."

AN AEROSOL Symposium opened the 1958/9 lecture program of the Society of Cosmetic Chemists of Great Britain on 14th October. Mr. Dixon, B.Sc., of Cooper, McDougall & Robertson Ltd. (U.K. Division) demonstrated his apparatus for recording aerosol spray patterns. The basis of the method is as follows:— A very soft coating of magnesium oxide may be given to a glass plate by burning magnesium beneath it. The plate is then opaque and the coating is sufficiently soft to be disrupted by small droplets of liquid. Thus when the plate has been sprayed and is viewed against a strong light, a pattern of holes is seen which correspond to the position and size of individual droplets. In order to stop an excessive quantity of spray from reaching the plate and spoiling the pattern, it is necessary to employ a shutter device. For this purpose a wooden "guillotine" with an adjustable slit which falls under gravity has been devised.

Although the coating is extremely soft, if it is carefully handled the plates may be placed downward on photographic printing paper and prints taken of the patterns, thus giving a permanent record.

J. Pickthall, F.R.I.C., of Polak & Schwarz (England) Ltd. dealt with perfumes in pressurized handkerchief perfumes and toilet waters. He stated that: "A traditional handkerchief perfume is simply an alcoholic solution of odorous ingredients; its pressure-packed equivalent also exists in this form together with a liquefied propellant, usually of the halogenated type."

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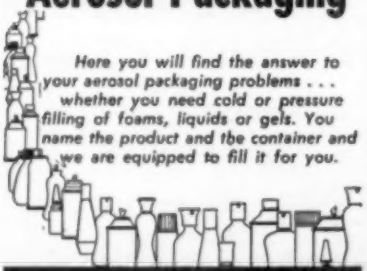

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3. Dry sprays for true handkerchief perfumes.

Spray characteristics are determined by the composition of the propellant, the ratio of alcohol to propellant, by the water content and finally, by the type of valve employed.

"Drastic changes in odor are said to occur when a perfume is pressurized. In terms of immediate effects, this is only true when the solution is space sprayed. When sprayed onto a surface, there is little or no difference in odor between a presure-packed perfume and a conventional type. Space spraying results in a drenching of the receptors and the balance of odor may be completely upset. Certain chemicals leap into prominence, while others lose their normal intensity. Irritation effects are also magnified under space-spray conditions.

"The stability of a perfume packed under pressure depends upon many factors. Under the most favorable conditions the amount of deteriora-

tion may not be serious. Most favorable conditions would be glass, low water content, complete absence of metallic impurities and the use of dichlorotetrafluoroethane. If the conditions of packaging are not completely favorable, then perfume deterioration can be serious. Traces of hydrochloric acid (the result of hydrolysis of the propellant) can play havoc with a perfume, and metallic impurities can catalyze unwanted reactions." Typical odor effects which can arise were also discussed.

A third speaker dealt with compressed gases as propellants for cosmetic products. Emphasis was placed on the fact that the pressure within the dispenser drops progressively as the product is dispensed and that a stage may be reached when the pressure will be insufficient to expel the remainder of the contents. Reference was also made to the possibility of dispensing liquid products with compressed gases. The lecturer emphasized that formulating for packs pressurized in this manner must be as thorough as with the more conventional packs and that stringent quality control must be associated with the filling procedure to ensure the success of the product. A number of searching questions were put to the lecturers and the answers thereto together with the discourses should make interesting reading when published in the *Journal of the Society of Cosmetic Chemists.*★

Product Formulation

(*From Page* 44)

tend to collect in the valve mechanism and either result in clogging or improper closure. None of the valves presently available are known to be completely free of this problem. However, we have found from our own experience that certain valves are much better than others. Hard crystalline powders are more prone to this type of valve problem than are soft amorphous powders like talc.

Even though the powder dispersion can be satisfactorily dispensed from an aerosol package, there still remains the problem of providing the required concentration of powder on the target without excessive loss due to blow-off. In many cases, this problem can be solved by the use of small amounts of an innocuous high boiling liquid to keep the powder temporarily wet and sticky. For example, with talcum powder, the addition of a fraction of a percent of a mineral oil aids in preventing powder blow-off without resulting in a permanently wet or oily feel on the target.

(3) *Emulsion Types*

Recently, it has been found that water-in-oil emulsion systems can be formulated to give either coarse, wet, residual type sprays, or fine, dry, space type sprays. Dr. P. A. Sanders of the "Freon" Products Laboratory of E. I. du Pont has done much development work in this field. Such formulation methods make it possible to use either or both water- and oil-soluble lactive components. In many cases, the use of water in the formulation results in a cheaper product than is possible with completely miscible spray systems.

Usually, a definite procedure must be followed when preparing water in oil emulsion products. Water-soluble and oil-soluble active components must first be dissolved in the appropriate emulsion phase. A suitable oil soluble emulsifying agent is added to the oil phase, which may be a mineral or vegetable oil or one of the high boiling propellants such as "Freon-11" and "Freon-113". The addition of the water phase to the oil phase can then be carried out with sufficient agitation supplied to produce the required emulsion characteristics. Once the water-in-oil emulsion is formed, fluorinated hydrocarbon propellants may be added to give the desired spray properties.

Many different surface active agents have been evaluated and have been found to create various effects upon the final emulsion product. Emulsions have been prepared which will result in a uniform dispersion of the water in the oil phase for several weeks before creaming or settling of the dispersed phase occurs. In other cases, uniform emulsions will last only a

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few seconds. Creaming or settling does not necessarily indicate that an emulsion has broken down, and usually slight agitation will reform a uniform dispersion of the water particles. Where actual emulsion breakdown does occur, more severe agitation is usually required to reform the emulsion, and where such agitation does not reform the emulsion a suitable spray product has not been obtained. Normally, only oil-soluble emulsifying agents are required, although for products like glass cleaners the addition of water-soluble agents to the water phase may be necessary to produce an effective product. From the standpoint of container corrosion non-ionic surface active agents are preferable. "Emcol-14", a polyglyceride ester of a fatty acid, has been found to be especially good in eliminating the hazard of container corrosion.

It is essential that the aerosol formulator have a good knowledge of the principles of emulsion chemistry. The amount and type of emulsifying agent, method of mixing the phases, relative densities of the two phases, and other such properties have definite effects upon the final emulsion system. Normally, the external oil phase can be diluted to any extent with fluorinated hydrocarbon propellant or other oil type component without greatly affecting the emulsion stability. Increasing the amount of the dispersed phase results in high viscosities until the point of emulsion inversion is reached. The pressure and spray characteristics of water-in-oil emulsion products seem to be almost independent of the internal water phase. Only the relative amount of flammable oil to propellant content has any effect upon product flammability. It is also interesting to note that for many water-in-oil emulsion systems, Propellant 11 can be used in connection with certain emulsifying agents without resulting in serious container corrosion. This is radically different than the results obtained with soluble systems containing Propellant 11 and any sizable amounts of water.

Although water-in-oil emulsion systems are basically adapted for spraying liquids, powders can often be dispersed uniformly in the water phase before it is added to the oil phase. If stable emulsions are prepared, possible agglomeration of the powder particles will be considerably reduced.

Sprayable oil-in-water emulsion systems can also be formed. However, since the propellant is in the inner phase of the emulsion, this method often leads to severe target foaming and valve drool. Also, from our experience, it is usually impossible to produce satisfactory space type sprays with such an emulsion system. Nevertheless, products such as glass cleaners and wall cleaners can be formulated along this line with the result that the foam deposit on the target will inhibit running on vertical surfaces.

(4) *Three Phase Types*

Although the three-phase type of formulation system has been known for some time, it has never become very popular. It consists of two separate liquid phases and a vapor phase. The bottom liquid phase is composed of sufficient propellant to vapor-fill the container with no pressure drop-off after complete product discharge. The upper liquid phase is composed of water and water-soluble active ingredients. The third phase is the propellant vapor phase which pushes the product out of the container. With this type of formulation no break up at the exit of the valve occurs due to propellant flashing since no propellant is discharged.

There are at least three obvious drawbacks to a formulation of this type, which have limited its usage.

1. Only wet coarse sprays can be produced, because no breakup of the product occurs at the valve due to propellant flashing.
2. None of the active ingredients can have any degree of solubility in the propellant phase without disturbing the concentration in the discharged spray.
3. The position of the product during spraying is extremely critical, since tilting of the container can result in the end of the dip tube being located in the propellant layer.

The only major aerosol product known to have used this type of system is the "Larvex" moth proofer.

B. *Foam Systems*

Aerosol foam products are based upon viscous oil-in-water emulsions where the liquid propellant is solubilized in the oil phase. Shave creams have long been prepared by this method. If desired, for such products as car cleaners and silver polishes, a powder may also be dispersed in the emulsion.

The foam discharge characteristics can be widely varied by altering the type and relative amounts of the components in the concentrate and propellant. By increasing the ratio of propellant to concentrate, a drier foam with a greater total volume can be produced. The resilience or elesticity of the foam discharge can be increased by merely using a propellant with a higher vapor pressure. And wet, unstable foams, with a coarse bubble structure, can usually be created by dilution of the concentrate with water.

Various other effects can be produced by varying the composition of the concentrate. Thickening agents such as CMC can have a decided influence upon the foam stability. The type and amount of surface active agents included in the concentrate will result in very definite effects upon the foam stability, wetness, structure, elasticity and other such properties. Additives such as lanolin, glycerol, silicone fluids, and others can radically change the feel of the foam product.

C. *Stream Systems*

Aerosol products which will produce a liquid stream discharge are sometimes required for such uses as marking livestock. Usually, this type of discharge is not too difficult to attain. Actually, I am certain that many formulators will be prepared to agree that stream discharges are much easier to *obtain* than they are to *correct*, especially when a spray product for an adhesive is desired. Usually, a stream can be produced by combining either a viscous concentrate or a low proportion of liquefied propellant with a standard spray valve. However, in some cases, a high product viscosity alone is not always satisfactory due to target foaming caused by flashing of the residual propellant.

Once the propellant characteristics and basic formulation methods are understood, the actual formulation of an aerosol product can be started. Unfortunately, there is no specific pattern of experimental work which will be satisfactory in all cases. However, there are some general pointers which should be kept in mind. These are summarized as follows:

General Formulation Procedures

1. List desired properties of final product.
2. Choose propellant and formulation system
3. Determine product and propellant compatibilities.
4. Determine composition boundaries within regulatory limitations.
5. Choose specific formulation, valve, and container.
6. Ensure economic feasibility of product and market potential.
7. Ensure that product can be commercially loaded.
8. Carry out patent search.
9. Do extensive product stability testing.
10. Prepare suitable label.
11. Obtain necessary registrations and approvals.
12. Arrange for commercial loading and marketing.

A detailed list of premarket tests for aerosol products is given in the Manual for Vendors and Fillers of Aerosol and Pressurized Packages, published by the Chemical Specialty Manufacturers Association. Pertinent Canadian shipping regulations are given in Subpart F of the Board of Transport Commissioners Regulations. Insecticidal products must be registered for approval with the Federal Department of Agriculture, and food and drug products must be approved by the related Federal Agencies.

Summary

Although various aspects involved in the formulation of aerosol prod-

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ucts have been presented briefly, the subject is far from being complete. Aerosol valves, containers, government regulations, patents and other such topics have only been mentioned in passing. Even the descriptions of aerosol propellants and formulations have been kept very brief. It is hoped, however, that sufficient details have been presented so that those organizations which may be planning to place new aerosol products on the market may realize the complexities involved and will take advantage of the many technical facilities available.

The development of a good aerosol product generally requires the work of a trained group of specialists. Often considerable study and expenses are encountered before a completely satisfactory product is obtained. And—although the techniques of commercial loading operations have not been mentioned at all, this vital phase of the industry also requires a considerable amount of specialized knowledge. The production of aerosols is far from being a routine task of loading solids, liquids and gases into containers.

Merchandisers of aerosol products can obtain valuable assistance from the contract or custom aerosol manufacturer and from the suppliers of valves, propellants and containers.

The aerosol industry in the U. S. and Canada has taken some giant steps during the last few years. The public is continuing to demand new aerosol products and the production and marketing of these aerosol products can be economically attractive. As has been stated many times before, anything which is now poured, daubed, dusted or brushed, can be a potential new aerosol product with sufficient advantages over other forms of packaging to create a most attractive outlook for increased sales and profit.

The aerosol market is far from being saturated at the present time, and although the formulation of a new product is not a simple task, a good product coupled with a sound sales program will soon justify the research expenditures.★

Trade Mark Applications

Applications for registration of the following trademarks were published in recent issues of the *Official Gazette* of the U. S. Patent Office. In not all cases are there strictly aerosol trademarks, however many of the products listed below come within the category of those for which a possible future use in aerosols is foreseen.

HOME BEAUTIFUL, for aerosol deodorant for use as a room freshener and sachet spray. Filed Jan. 13 by Revlon, Inc., New York, with first use reported Dec. 15 of previous year.

COCOLIVA, for toothpastes, hair dressings, colognes, and other cosmetics. Filed March 8 by A. y R. Galofre & Cia, Limitada, Bogota, Colombia.

CRAG and SEVIN, both for insecticides. Both filed Dec. 31, 1957 by Union Carbide Corp., New York, claiming first use July 24 of same year.

ISOVAL, for insecticides and rodenticides in liquid and solid form. Filed Nov. 22, 1957 by Motomco, Inc., Clark, N. J., with first use reported Nov. 8 of same year.

SHIELD, outline letters in a black shield emblem, for household air refresher spray and a moth proofer which kills moths, eggs, and larvae, and an insect repellent. Filed June 26, 1957 by Shield Chemical Co., Needham Heights, Mass., claiming first use Sept. 15, 1956.

SPRAY-CURL, for hair spray. Filed July 30, 1957 by Revlon, Inc., New York, with first use claimed July 9 of same year.

HALSAN, for inhalation anesthetic. Filed March 11 by Fort Dodge Laboratories, Inc., Fort Dodge, Iowa, claiming first use Jan. 2, 1958.

SEA AND SKI, for lotion for use as a relief from, and preventive for chapping, skin irritations, and diaper rash. Filed Sept. 16, 1957 by Botany Mills, Inc., Passaic, N. J., assignee of Rolley, Inc., South San Francisco, Calif.

DREAM SET, for hair set spray preparation. Filed Feb. 24 by the Andrew Jergens Co., Cincinnati, O., claiming first use Feb. 7 of this year.

PRIZE, for deodorants, Filed Feb. 28 by Carter Products, Inc., New York, reporting first use Jan. 23 of this year.

DEOREX, for deodorant for clothing. Filed Jan. 2 by the Upjohn Co., Kalamazoo, Mich. with first use claimed for Sept. 20, 1957.

RE-FRESH-EN, *for liquid* disinfectant. Filed July 5, 1955 by Tesco Chemicals, Inc., Atlanta, Ga., reporting first use on or about 1950.

NASOTHRICIN, for medicinal preparation for the relief of nasal congestion. Filed April 1 by Rexall Drug Co., Los Angeles, Calif., with first use reported as Jan. 13, 1954.

STA-PUT, for chemical non-skid spray for rugs and for other uses. Filed Oct. 9, 1957 by Cling-Surface Co., Buffalo, N. Y., claiming first use on Sept. 15 of same year.

New Aerosol Patents

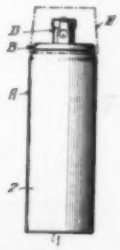
Listed below is a brief review of recent patents pertinent to the aerosol and related industries.

Complete copies of these patents may be obtained by writing to the publisher of this magazine, Aerosol Publications, Box 31, Caldwell, N. J., and remitting 50c for each copy desired. For orders received outside of the United States the cost will be $1.00 per copy.

24,555 (Reissue). DISPENSING CAP FOR AEROSOLS. Original No. 2,819,116 issued Jan. 7, 1958 to Robert H. Abplanalp, Bronxville, N. Y., assignor of one-half to John J. Baessler, Bronxville, N. Y.

A dispensing cap for aerosol containers having a tubular discharge valve stem comprising: an upstanding peripheral wall across the interior of which extends a valve operating tab attached for a short distance at its periphery to said wall to form a hinge portion therewith and otherwise unattached to the peripheral wall but extending closely adjacent thereto, and a hub projecting from the inner side of said tab and chambered to form a socket for the tubular valve stem of an associated container, said chambered hub extending outwardly through said tab to form an outlet, whereby pressure on the exterior of the tab may be utilized to operate the valve stem and unseat the valve for the discharge of the contents of the container through said outlet.

2,856,102. PRESSURE DISPENSING CONTAINER. Issued Oct. 1958 to Frederic Remington, Elizabeth, and Richard A. Tartaglia, East Orange, N. J., assignors to Peerless Tube Co., Bloomfield, N. J., a corporation of New Jersey.

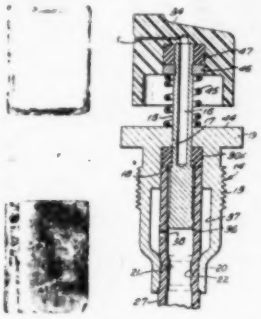


A pressure dispensing container comprising a one-piece extruded aluminum main body portion having a cylindrical side wall and an integral bottom wall at one end thereof, the other end of said side wall being drawn into a reduced cylindrical portion of lesser diameter than said main body portion and there being a convexly curved shoulder between said main body portion and said reduced portion that is tapered toward the reduced portion, said reduced cylindrical portion having its outer extremity rolled inwardly into a continuous rigid circumferential bead that is hollow and approximately circular in cross section and in spaced relation to said curved shoulder, a sheet metal top wall having a circumferential flange in fluid-tight relation to said bead to provide a fluid-tight joint between said top wall and said cylindrical reduced portion, and a dispensing valve secured in said top wall within said circumferential flange.

2,855,845. PRESS FOR PRINTING ON CYLINDRICAL ARTICLES. Issued Oct. 1958 to Joseph F. Feeney, Philadelphia, Pa.

A press for printing on cylindrical cans comprising in combination, a type chase, an inking plate, an inking roller assembly, a track at each side of the chase along which the inking roller assembly is adapted to move, a work holding member mounted to move upwardly and downwardly with respect to the chase, means for raising the holding member and moving the inking roller assembly along said tracks to effect inking of the type and then to return the assembly and lower the holding member, said holding member being provided with an opening through which the printing face of the type is adapted to project, a pair of spaced tracks for the cans arranged on the back of the holding member transversely of the inking roller tracks, and a carriage mounted on the back of the holding member for back and forth movement in the direction of said can tracks, said carriage being adapted to roll the cans along their tracks from one side to the other of the press to effect the printing operation.

2,856,105. SPRAY VALVE. Issued Oct. 1958 to Lawrence T. Ward, Portland, Pa.



A valve dispenser for aerosol containers having a screw-threaded aperture in the top wall thereof comprising a tubular housing

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North Walnut St., Madison, Wis.

having a top wall having a small cylindrical top borehole therein, an intermediate cylindrical borehole below said top borehole and communicating therewith, and a bottom cylindrical borehole below said intermediate borehole and communicating therewith; screw-threaded means of securing said housing in said screw-threaded aperture of said top wall of said aerosol container in a gas tight manner; a resilient ring having an aperture is disposed in a gas tight manner in said intermediate borehole, the aperture wall being contiguous with the wall of said small borehole; a dip tube having an exterior diameter substantially equal the diameter of said intermediate borehole disposed through said large borehole and in gas tight relationship in said intermediate borehole and against said ring, said tube having an internal diameter suitably larger than the aperture of said ring forming thereby an inner annular rim of said ring disposed in said intermediate borehole; depending funnel means integral with said housing seizing in a gas tight manner said dip tube, constricting said dip tube and thereby forming a reservoir chamber between said dip tube and the wall of said large borehole, said dip tube having a lateral opening communicating between said chamber and the interior of said dip tube; a reciprocal plunger having a top tubular portion of small diameter communicating with a borehole therein having a lateral aperture in suitable spaced relationship above its base, said top plunger portion being non-tiltingly extending through the top borehole of the housing top wall and in gas tight relationship at all times in the aperture of said resilient ring; said plunger having a solid bottom portion of larger diameter than said top portion forming thereby an annular ridge disposed below said ring and adapted to engage said rim of said ring in a valve seat gas tight manner, said bottom portion having an enlarged bulbous nose adapted to pass said lateral opening in said dip tube in a valve operating manner for permitting filling up and emptying of the reservoir chamber; spring means disposed about the tubular plunger portion and upon the top wall of said housing and a conventional spray valve button having a lateral spray conduit secured to said top plunger portion above said spring means with the spray conduit in communication with the plunger borehole.

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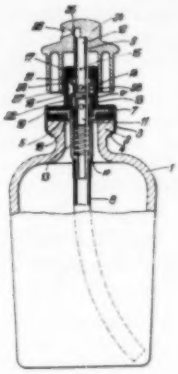
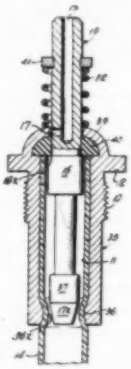
2,858,053. Dispensing Device. Issued Oct. 1958 to Wilhelm Waldherr, Mannheim, Germany.



A dispensing device comprising, in combination, a container adapted to hold a fluid under pressure, said container having an open top; cap means engaging said open top of said container to close the same and having in its interior a metering chamber, said cap means having a tubular open bottom end portion extending into and communicating with the interior of said container; a plurality of coaxial sealing rings carried by said cap means coaxially with said tubular end portion thereof and axially spaced from each other; an elongated tube having opposite open ends and formed intermediate said ends with a transverse wall, said tube having a pair of wall portions respectively located on opposite sides of said traverse wall and respectively formed with openings, said tube extending through and being slidably guided by said sealing rings for movement between one end position where one of said tube openings is closed by one of said sealing rings and the other of said openings is located in said metering chamber to provide communication between the latter and a first interior portion of said tube on one side of said transverse wall thereof and an opposite end position where said other opening is closed by another of said sealing rings and said one opening communicates with said metering chamber to place a second interior portion of said tube on the other side of said transverse wall in communication with the interior of said container and said metering chamber.

2,856,103. Spray Valve Having Syphon Tube Metering Chamber. Issued Oct. 1958 to Lawrence T. Ward, Portland, Pa.

A metering spray valve for self-propellant liquids comprising a tubular cylindrical valve housing having an enlarged diameter metering chamber borehole converging into a restricted borehole aperture adjacent the bottom of the borehole, said housing having screw threaded means for securing to a high pressure resistant container and having further an annular integral retaining collar above said screw threaded means and in space relationship to said borehole; a non-metal resilient syphon tube disposed in said housing borehole lining the entire borehole and extending downwardly therefrom; a non-tilting integral plunger having a top section having a top borehole therein communicating with a lateral opening at the base of the borehole, an enlarged middle section integral with the bottom of said top plunger section and having a circular flat top wall and a bottom plunger section integral with said middle section and having a valve head at its extremity, said plunger having its bottom section and middle section disposed normally in close spaced relationship within the syphon tube located in the housing borehole; a sealing ring disposed seizingly about said top plunger section and within said annular collar of said housing for effecting a hermetical seal continuously with the plunger top section, said ring also extending within the borehole for effecting an intermittent hermetical seal between the bottom of said sealing ring and the flat top wall of said middle section, and spring means secured about said plunger for urging said plunger continuously outwardly from said housing whereby inward movement of said plunger into said housing



first causes said valve head to close the restricted tube portion within said housing and subsequently causes the lateral opening of the plunger top section to pass below said sealing ring to establish communication with the liquid within the syphon tube in the housing borehole, thereby permitting the liquid contents of the housing borehole to be dispensed into and through the top plunger section.

•

Tasti-Cup Names Agency

Tasti-Cup Coffee Corp., New York, first marketer of a coffee product packaged under pressure, has named Roy S. Durstine, Inc., New York, as its advertising agency.

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CLASSIFIED ADVERTISING

Rates for classified advertisements are ten cents per word, $2.00 minimum, except those of individuals seeking employment which *Aerosol Age* will run without charge. Check must accompany all classified advertisements. Address all replies to Classified Advertisements with Box Number, care of *Aerosol Age*, Box 31, Caldwell, N. J. Closing date: tenth of month preceding month of issue.

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EQUIPMENT WANTED

"WANTED — Used aerosol production equipment, automatic and semi-automatic, pressure filler, can crimper, liquid filler, and leak test tank. Write Midwest Consultants, 3500 Dekalb, St. Louis, Mo."

Arthur Rasmussen Dies

Arthur Rasmussen, vice-president and general manager of Furst-McNess Co., Freeport, Ill., died recently. He had been with the firm nearly 32 years, and prior to that was advertising manager of W. T. Raleigh Co.

Named to succeed Mr. Rasmussen was Kenneth Inman, a 30-year veteran with the firm who had been named vice-president about a year ago.

•

Malcolm Miller Resigns

J. Malcolm Miller, administrative manager of the Association of American Soap & Glycerine Producers, resigned early last month after 26 years with that organization.

Allethrin Discoverer Dead

Dr. Frederick B. LaForge, well known USDA chemist and co-discoverer of allethrin, died recently in Washington after a long illness. In 1933 he received the Hillebrand Award from the Chemical Society of Washington for being co-discoverer (with Dr. H. L. Haller) of the molecular structure of rotenone, an important insecticide.

Following this he did extensive chemical investigation of pyrethrum, one of the most widely used insecticides in aerosols. In 1948 this work culminated in the announcement that Dr. LaForge and his co-workers, M. S. Schechter and Nathan Green, had discovered a practical method for the synthesis of pyrethrin-like esters (one of which, allethrin, is extensively used in insecticidal aerosols). Produced from raw materials available in the U. S., allethrin to a large extent has relieved the U. S. of dependence of foreign-grown pyrethrum. For this Dr. LaForge was given the Superior Service Award by the USDA and an Achievement Award by the CSMA.

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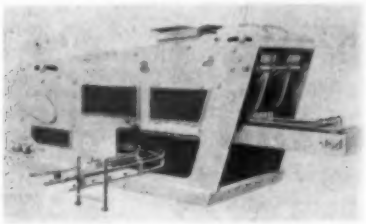
Equipment and Bulletins

(From Page 93)

New Carton Uncaser

A new universal uncaser that can handle nearly all conventional aero-



sol containers has been announced by the Radio Corp. of America, Camden, N. J. Operating at speeds of up to 50 cases per minute, the unit can be installed to feed any make of single filler. Infeed and outfeed can be varied to suit specific applications and changeover from one size container to another can be made in less than five minutes.

No compressed air or timing devices are needed since the unit, called the "Model CU-1 Universal Caser", operates in a continuous and purely mechanical motion. Cartons entering the unit are engaged by a bar type conveyor and advanced in a reverse "S" path. The containers are deposited in an upright position upon an outfeed conveyor and the empty cartons are discharged from the top of the machine.

Further information on the unit is available from Radio Corp. of America, Industrial Electronic Products, Bldg. 15-1, Camden, N. J.

•

Isotron Propellant Bulletin

A new bulletin, with complete vapor pressure tables and other useful technical information on "Isotron" propellants, has been published by Pennsalt Chemicals Corp., Philadelphia. The publication, of particular value to aerosol fillers with a variety of propellant requirements, includes vapor pressure tables on mixtures of "Isotrons" 11 and 12 and mixtures of "Isotrons" 12 and 114 for temperatures ranging from —40 F. to 160 F.; and vapor pressure tables for 100 per cent Isotron 11, 12, 22, 113, and 114. A complete data report of the physical properties of the five propellants is also included in the new bulletin.

Isotron propellants are said to be nonirritating, noncorrosive, nonflammable, and stable even in alcohol solutions required by many formulas.

Copies of the new bulletin, which tells about the company's laboratory and technical services, as well as technical data on the "Isotron" line, are available by writing to Isotron Department, Pennsalt Chemicals Corp., 3 Penn Center, Philadelphia 2, Pa.

•

Toxaphene for Aerosols

Toxaphene, for several years one of the leading agricultural insecticide materials, has now been officially accepted for registration as a household insecticide. The announcement was made last month by Hercules Powder Co., Wilmington, Del., sole producer of technical toxaphene and manufacturer of other chemicals for insect pest control.

The company pointed out that the new development means that formulators can take advantage of the superior properties of toxaphene in such items as space sprays, aerosols, and mothproofing agents. Among the pests toxaphene controls are flies, mosquitoes, gnats, ants, silverfish, bedbugs, roaches, house spiders, black carpet beetles, clothes moths, fleas, and many small flying insects.

Formulators of household insecticides have expressed great interest in toxaphene both because of its wide range of control and for its economy. In addition to a comparatively low cost to formulate, toxaphene does not require an auxiliary aromatic solvent, and also is said to offer long residual biological activity.

•

New Microbiocide Announced

A new all-purpose germicide that is non-toxic, non-staining, and water soluble, has been announced by Ruson Laboratories, 3434 S.E. Milwaukie Ave., Portland 2, Ore. Called "Virac", the material is a complex of iodine and a cationic detergent which is described as being "rapidly lethal to all types of pathogens in very low concentrations." Because of this and other characteristics, it has been declared to be superior to liquid surgical soap, hexachlorophene, and benzalkonium chloride, and may be applicable for aerosol pharmaceutical preparations.

Due to its surfactant quaternary iodine complex, it is said to have excellent detergency and penetration. "Virac" is a relatively stable preparation, completely miscible with water. Even in the presence of body fluids, it reportedly retains its desired germicidal potency. The company reports that it can be used in a wide range of infectious conditions, from tinea through pyoderma, furunculosis, infectious conjunctivitis, antibiotic-resistant staphylococcus infections, wound infections, monilia, and trichomonas vaginitis.

•

Corrugated Box Booklet

Nine basic rules for efficient stacking and loading are discussed in a new edition of "How To Stack and Load Corrugated Shipping Boxes," a booklet published by Hinde & Dauch, Sandusky, Ohio.

New copy and detailed illustrations describe effective methods of estimating storage space, distributing load weights, handling, identification, and the use of gates, bulkheads, barricades and weatherstripping. A copy of the new 16-page booklet is available on request to Hinde & Dauch.

•

Dow Products Catalog

Dow Chemical Co., Midland, Mich., last month announced publication of the latest edition of its products catalog, which describes the properties and uses of 375 industrial, pharmaceutical, and agricultural chemicals. Copies of the catalog, the fourth annual issue of the booklet, are available by writing directly to the company.

•

Fairfield Acquires "Powco"

The Fairfield Chemical Division of Food Machinery & Chemical Corp., New York, has announced the acquisition of the inventory of "Powco" pesticide concentrates from the Olin Mathieson Corp. The acquisition also involves the "Powco" brand name.

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Am. Cholesterol Names Agent

American Cholesterol Products, Inc. of Amerchol Park, Edison, N. J., has announced the appointment of Whittaker, Clark & Daniels, Inc., 260 West Broadway, New York, as its export sales representative.

American Cholesterol Products, manufactures sterol and lanolin derivatives for all types of aerosol cosmetic and pharmaceutical preparations. Whittaker, Clark & Daniels supplies basic materials for the cosmetic, and pharmaceutical industries.

Fleuroma Names Eisenkraft

Fleuroma, Inc., New York essential oils and aromatic manufacturer, has announced the appointment of Albert E. Eisenkraft to sales manager. He has been a sales representative for the company since 1951.

OVER THE TRANSOM

SOME of the major custom fillers have taken exception to the lead paragraph in a paper given by John C. Armstrong, of Armstrong Laboratories, Inc., Boston, Mass. ("Rx for Aerosol Packaging . . . Use a Contract Filler," *Aerosol Age* November, page 18.) The specific passage that has come under fire is " . . . We of Armstrong Laboratories *do not* think that, ultimately, the contract filler can do a better job in all respects of packaging aerosol pharmaceutical products than the drug manufacturer."

Executives of these major contract fillers disagree with this position, and express the opinion that the contract filler *can* do a better all-round job at less cost than the drug manufacturer who tries to take the filling operation under his own roof. Far be it from us to start another controversy, especially one among custom fillers with basically the same interest. We were not advancing any opinion of our own)—just reporting what the speaker said.

The status of standard-size aluminum containers may have hit a temporary snag, at least so far as the mass consumer market in the U. S. is concerned. We have heard that several of the production models introduced during the past year *cannot* be used with conventionally fabricated one-inch valve mounting cups, and that serious leakage has developed during shelf testing. However, our informants tell us that mounting cups of different materials and possibly new gasketing materials should have the problem whipped by the first of next year.

* * *

Colgate-Palmolive, which won the race to mass market an aerosol toothpaste product in the U. S. the first of this year, has apparently duplicated the feat in England. Packaging News for November reports that Colgate's British subsidiary has already succeeded in securing national distribution through wholesale chemists and direct trade retail shops. The product will be equipped with an American-made Precision valve, and unlike the U. S. product (which is in a tinplate can) will be packaged in an extruded aluminum container with a rolled-on tinplate bottom. These containers are made by John Dale Ltd., London.

* * *

Though no aerosol valves are currently being manufactured in Canada, the existing Canadian tariffs list aerosol valves in the same category as conventional water and other liquid valves that *are* being produced in Canada. Thus U. S. valves being shipped into Canada are being ticketed with a 20 per cent tariff. This basically unfair classification system is reported to be one of the items for early action by the new Canadian Manufacturers of Chemical Specialties Association, and may have been corrected by the time the association meets again in Toronto next year.

* * *

One aspect of insecticide product safety that possibly hasn't been sufficiently brought out (from an advertising standpoint) is the fact that aerosol insecticides minimize the danger that toxic insecticide materials could be eaten accidentally by children or animals.

* * *

Revlon, Inc., one of the largest of the aerosol product marketers, has gained operating control of Schick, Inc., a leading producer of electric shavers. The purchase price has been reported unofficially as $3,630,000, or the price of 242,000 shares of Schick stock. First news of the acquisition came with the announcement of the resignation of Kenneth C. Gifford as chairman and president of Schick. By the acquisition, Revlon takes over a new plant in Lancaster, Pa. and 1,100 additional employees.

* * *

The publicity committee of the CSMA's Aerosol Division scored another impressive triumph last month with the placement of a four-column feature article in the "Home Improvement" section of the New York Times for Sunday, Nov. 16. Called "Spray It on," the story outlines all the possible uses for the aerosol in the home. One particularly good feature of the article is a discussion of exactly how to use an aerosol paint product to achieve maximum results.